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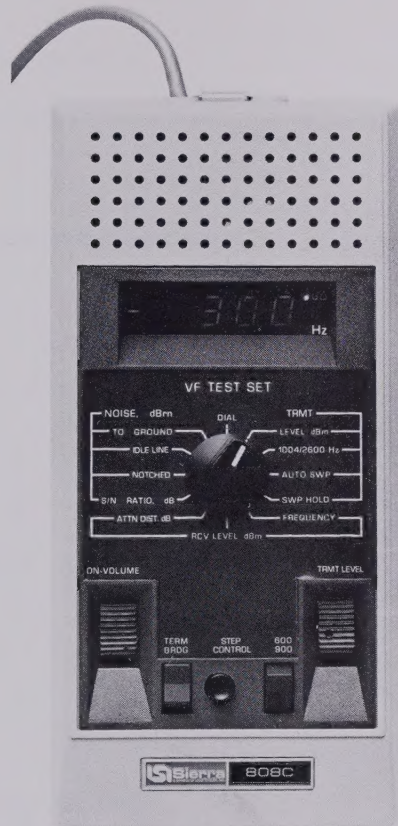
808C

808C-11

808C-12

VOICE FREQUENCY TEST SET

MAINTENANCE MANUAL



LSI/Sierra 808C Voice Frequency Test Set

This Maintenance Manual provides information for service and calibration center use. It is suggested that the instrument be calibrated on an annual basis, depending upon conditions and user requirements.

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1. FUNCTIONAL DESCRIPTION

1.01 The 808C series test set consists of a variable voice frequency (VF) oscillator, a level/noise/frequency meter, an LED display, and an audio frequency monitor, all of which are controlled by a microprocessor central processing unit (CPU). The CPU performs test functions such as controlling measurement ranging, and performing the calculations and conversions necessary for the digital display. The CPU communicates with the analog circuitry via interface modules for function, signal, oscillator, and display. The CPU is also connected to the data bus, as well as the analog-to-digital (A/D) converter and the prescaler. Through the data bus, the CPU has access to its memory storage devices: the read-only memory (ROM) where the computer program instructions are stored, and the random access memory (RAM) which serves as a "scratch pad" to temporarily store test results and calculations. Since the bus is shared by all devices within the microcomputer, the CPU controls the ON/OFF status of each device.

VF SIGNAL GENERATOR/TRANSMITTER

1.02 When the test set is in the AUTO SWP Function Selector switch position, the signal generator produces a swept VF range with an automatic repeat that matches the frequency values found in Table 2-5. A manual interrupt is provided on the test set to hold (SWP HOLD) any particular output frequency, but as soon as the hold is released (AUTO SWP) the next sequential frequency is transmitted and the timed frequency step sequence is resumed. Provision is made on all 808C series models to manually sweep the transmitter frequency at the rate of two frequency tones per second using the STEP CONTROL pushbutton. The digital display provides immediate identification of each frequency step.

1.03 Output level can be adjusted for a specific dBm value with the thumbwheel TRMT LEVEL control, and the digital display. 1004 Hz (800 Hz for 808C-11/C-12) can also be generated continuously for standard level measurement in the LEVEL, dBm position, and as a "holding tone" to lock companders in the "open" mode. Notched noise measurements can then be made with another 808 at the distant end. (Compandor open mode occurs when the tone level being transmitted is the same in all parts of the circuit; i.e., there is neither gain nor loss in any of the companding amplifiers. In many older U.S. circuits, open mode was achieved with a level of -13 dBm.)

In the sweep mode, the 808 generator avoids energy near 2600 Hz to prevent interference with signaling devices which may be on the circuit. Thus the 2604 Hz signal is omitted from the frequency sweep plan. Each frequency is generated for about 5 seconds. In the 1004/2600 Hz position the 808C transmits 1004 Hz after the function is selected, and 2600 Hz when the STEP CONTROL pushbutton is momentarily depressed. The 808C-11 and C-12 models have a similar 800/820/850 Hz position that transmits 800 Hz after the function is selected; it can be stepped to 820, or 850 Hz, by momentarily depressing the STEP CONTROL pushbutton once, or twice, respectively.

LEVELMETER

1.04 Incoming level measurements are displayed in dBm when the 808 is operated in the RCV LEVEL, dBm position. The last level measured during the receive level function is stored when the Function Selector is turned to another position. This stored reference level is compared to the current signal level received when the 808 is operated in the attenuation distortion (ATTN DIST, dB) position, and then the relative attenuation is displayed. This feature is typically used in conjunction with a distant 808, generating tones via the auto sweep function. Frequency and relative level are alternately displayed. In this manner attenuation distortion can be quickly read, and recorded if desired.

FREQUENCY METER (Counter)

- 1.05 A frequency counter senses the analog signal's frequency (transmitted or received) and transmits this information digitally to the CPU and the LED display via the data bus. Provision is made to audibly monitor the transmitted and received frequencies via a built-in speaker with an adjustable volume control.

SIGNAL-TO-NOISE

- 1.06 In the S/N RATIO, dB position, the set measures signal-to-noise ratio by first measuring the received test tone level at 1004 Hz (808C) or 800 Hz (808C-11/C-12) and then measuring circuit noise with the test tone notched out. The test tone is passed through a low pass 10 kHz filter and into the level detector (average/true RMS) via multiplexers. The signal level is determined and stored in RAM via the A/D (analog-to-digital) converter and the data bus. To measure circuit noise level, the received signal is first passed through a notch filter to filter out the holding tone. Then the noise level is measured by the level detector circuits and stored in RAM. The values are processed and calculated by the microprocessor and the results are displayed on the digital display in dB units. Selection of the signal-to-noise function automatically implies that measurements are made using the C-Message filter for the 808C or the psophometric filter for the 808C-11 and C-12 models. Signal-to-noise measurements can also be made using the 3 kHz flat filter by momentarily depressing the STEP CONTROL pushbutton while in the signal-to-noise function.

NOISE METER

- 1.07 In the IDLE LINE noise position, idle circuit (terminated) noise is measured through the C-Message (808C) or psophometric (808C-11 and C-12) filter, and shown on the digital display. (Other test tones and notches are absent in the IDLE LINE position.) When the Function Selector is set to the NOTCHED position, notched circuit (terminated) noise is measured through the C-Message (808C) or psophometric (808C-11 and C-12) filter and the incoming test tone is removed using the notch filter. In the TO GROUND position, common mode noise-to-ground is measured using the C-Message (808C) or the psophometric (808C-11 and C-12) filter. All the noise measurements above can be made using the 3 kHz flat filter by rotating the Function Selector to the desired mode and then momentarily depressing the STEP CONTROL pushbutton.

A/D CONVERTER

- 1.08 The A/D converter's function is to change the analog signal's input level and noise to a sequence of binary number codes or "digital words" representing the original values. The digital words are then sent to the CPU and the LED display via the data bus.

INTERFACE MODULES

- 1.09 The function interface senses which of the 12 positions of the function switch is selected. It also senses the input impedance and whether or not the STEP CONTROL pushbutton is depressed. After gathering all this information, the function interface converts it to binary code and sends this data to the CPU via the data bus.
- 1.10 The signal control interface converts the digital words from the CPU into control signals which enable the various multiplexer ports and amplifiers in the receive measurement sections of the test set.

- 1.11 The oscillator interface converts the CPU's digital words into signals to control the various transmit frequencies of the sine wave oscillator.
- 1.12 The display interface contains a decoder that converts the digital words from the bus to codes which light the appropriate segments of the digital display.

BRIDGED/TERMINATED MEASUREMENTS

- 1.13 A switch is provided to select either bridged or terminated mode (BRDG/TERM). Bridging permits measurements on working circuits or in circumstances where the circuit is already terminated. In the terminated mode, the 808 supplies the load for an otherwise open circuit. Another switch selects 600 and 900 ohm terminations for the model 808C, or 150 and 600 ohm terminations for the models 808C-11 and C-12. These termination choices permit more flexible applications of the 808C series test set in central office and direct cable measurements.

SELF-TEST

- 1.14 When the 808 is first turned on, the set automatically performs a number of self-checks and a display indicator test. During the self-test the unit will display +888.8 while the audio output is reverse scanned in accordance with the sweep frequency plan used with each model.

HOLD CIRCUIT

- 1.15 A dial network holding circuit is provided to prevent dropping a dialed-up connection while making tests. To select the holding circuit, rotate the Function Selector to the DIAL position, then depress the STEP CONTROL pushbutton, and note that the most significant decimal point lights. Once the holding circuit has been selected as described above, the operator may disconnect the hand test telephone from the "cuff link" stud terminals and rotate the Function Selector to any test position desired. To cancel the holding function, the selector need only be rotated back to the DIAL position.

(This dial hold circuit should not be confused with the Function Selector position for holding tones, which are used to hold compandors in their open state, or confused with the sweep hold (SWP HOLD) position which just stops the sweep at a particular frequency.)

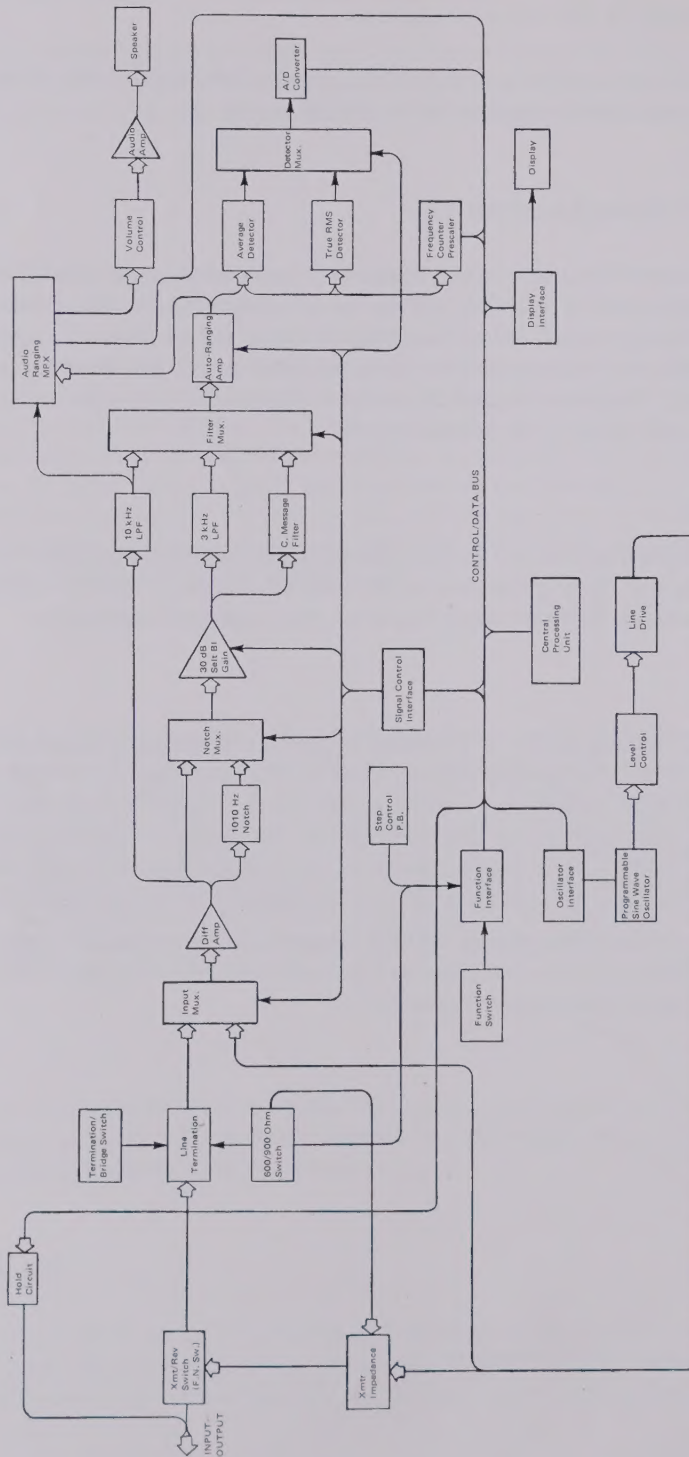


Figure 1-1. Functional Block Diagram

2. CALIBRATION

TEST EQUIPMENT

2.01 Test equipment recommended for maintenance of the Sierra 808C series is listed in Table 2-1. Equivalent instruments, with characteristics equal to or better than those listed, may be used in lieu of the specific models or types recommended.

Table 2-1. RECOMMENDED TEST EQUIPMENT

DESCRIPTION	MANUFACTURER & MODEL OR PART NUMBER	COMMENT
Frequency Synthesizer	Hewlett-Packard 3325A	Note: A 50 ohm output, + 10 dBm signal generator may be used, provided it is monitored by an accurate frequency counter.
Digital Multimeter	Dana 4300	1 Megohm input or greater; 1% accuracy
High Resolution Counter	Fluke 1900A	2 MHz or greater
AC Voltmeter, Digital	Fluke 8920A	1 M ohm input or greater; 200 Hz-4 kHz; linear dB; true RMS
Power Supply	Hewlett-Packard Harrison 6205B	0-50 VDC, 750 mA
Termination Resistor		600 ohm

INTERNAL ACCESS

2.02 For access to internal parts of the 808C, and to various test points on the PCBs, remove the back cover as follows:

- Step 1: Turn the ON-VOLUME control to OFF.
- Step 2: Remove the four captive screws from the battery cover (case back), and remove the cover and battery pack.
- Step 3: Remove the three screws securing the case bottom: two located on the upper battery compartment, and one located at the lower end of the case.
- Step 4: Remove the case back, allowing the battery cables to slide out of the battery compartment. Set the battery pack on a bench, next to the 808C, and connect the battery cables, observing the proper polarity.

RECEIVER TESTS

2.03 Receiver tests should include each of the following functions:

- 1) dial
- 2) noise-to-ground
- 3) idle line
- 4) notched noise
- 5) signal-to-noise ratio
- 6) attenuation distortion
- 7) receive level
- 8) frequency accuracy

DIAL TEST

2.04 The dial test is performed as follows:

- Step 1: Allow the unit to initialize after power is applied.
- Step 2: Position the Function Selector to the DIAL position. The display should indicate a negative sign, and the dB and Hz indicators should be off.
- Step 3: Set an adjustable 0 to 50 VDC supply to 36 VDC and connect its output to the cuff link terminals J7 and J8 of the 808C series instrument (hereafter just 808 when all three models are referenced).
- Step 4: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights.
- Step 5: Measure the holding current drawn by the 808's line holding circuit, using either the lab supply current meter or an ammeter connected in series with J7 or J8. With the lab supply adjusted to 36 V, and the most significant decimal point lit on the 808, the ammeter should indicate equal to or greater than 23 mA, but not more than 40 mA.

PRELIMINARY TEST SET-UP

2.05 Before beginning calibration procedures, allow test equipment to warm up for a minimum of 15 minutes.

- Step 1: Connect test equipment in accordance with Figure 2-1, attaching the synthesizer between tip and ring (or "A" and "B") of the 808 test cord termination. (Note that model 808C-11's test cord terminates in a "Siemens" (triple banana) plug, and the 808C-12's test cord is terminated with a crocodile (alligator) ground lead and two expansion-pin-plugs (single banana). For convenience, "A" and "B" designate the pin plugs connected to the balanced line leads in the 808C-11/C-12 Operation Manuals.)
- Step 2: Ensure that the AC voltmeter is calibrated to measure power into a 600 ohm load (where $0 \text{ dBm} = 0.775 \text{ Vrms} = 1 \text{ mW into } 600 \text{ ohms}$), or use the proper correction factor.

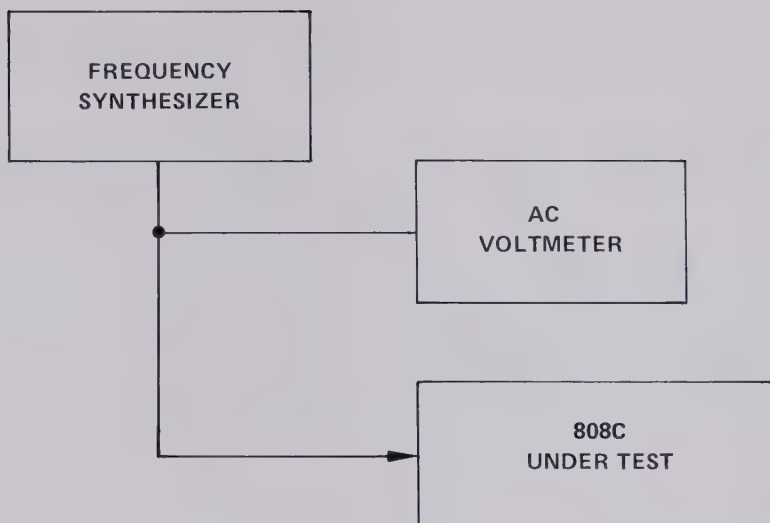


Figure 2-1. Test Set-Up

LEVEL

2.06 Receive Level Measurements are tested as follows:

- Step 1: Position the 808 Function Selector to the RCV LEVEL, dBm position; TERM/BRDG switch to TERM; and 600/900 (or 150/600) switch to 600. Roll the ON-VOLUME control forward to On.
- Step 2: Set the synthesizer output frequency for 1004 Hz for the 808C or 800 Hz for the 808C-11/C-12 and adjust the synthesizer output level to 0.0 dBm on the AC voltmeter.
- Step 3: Adjust A3 R16 until a 0.0 dBm value is obtained, as indicated by the 808 display (display changes from -0.0 to +0.0 or from +0.0 to -0.0)
- Step 4: Set the synthesizer for +9.9 dBm on AC voltmeter. The 808 should display +9.9 dBm $\pm$ 0.2 dB.
- Step 5: Reduce the synthesizer output level in 10 dB steps and ensure that the 808 responds as follows:

AC VOLTMETER INDICATION	808C, 808C-11, 808C-12 DISPLAY
+9.9 dBm	9.9 dBm $\pm$ 0.2 dB
0 dBm	0 dBm $\pm$ 0.1 dB
-10 dBm	-10 dBm $\pm$ 0.1 dB
-20 dBm	-20 dBm $\pm$ 0.1 dB
-30 dBm	-30 dBm $\pm$ 0.2 dB
-40 dBm	-40 dBm $\pm$ 0.2 dB
-50 dBm	-50 dBm $\pm$ 0.3 dB

- Step 6: Reset the frequency synthesizer output level to 0.0 dBm and output frequency to 200 Hz. The 808 should show 0.0 dBm $\pm$ 0.2 dB.
- Step 7: Change the synthesizer output frequency to 2 kHz and ensure that the 808 still shows 0.0 dBm $\pm$ 0.2 dBm.
- Step 8: Change the synthesizer output frequency to 4 kHz. The 808 should show 0.0 dBm $\pm$ 0.2 dB.
- Step 9: Set the synthesizer output frequency to 1004 Hz if the unit under test is an 808C, or 800 Hz if the unit to be tested is an 808C-11 or C-12. For an 808C, the display should drop -1.7 dB when the 600/900 switch is changed to the 900 position. If the unit under test is an 808C-11 or C-12, the display should rise $+6.0$ dB when the 150/600 switch is changed to the 150 position. (Note: These dB-of-change values assume that the synthesizer has a 50 ohm source impedance, terminated only by the 808 unit.)
- Step 10: Return the switch to the 600 position.

ATTENUATION DISTORTION

2.07 Test attenuation distortion measurements as follows:

- Step 1: Turn 808 Function Selector switch to ATTN DIST, dB. The display should momentarily show 1004 Hz for an 808C, or 800 Hz if the unit under test is an 808C-11 or C-12. After briefly displaying frequency, the unit will switch to a display of level, in dB relative to the value stored in memory while the unit was in the RCV LEVEL, dBm position. In this case the unit should display 0.0 dB.
- Step 2: Adjust the synthesizer output to the following levels, and ensure that the 808 display corresponds to the values shown below:

AC VOLTMETER INDICATION	808C, 808C-11, 808C-12 DISPLAY
+ 10 dBm	$-10 \text{ dB} \pm 0.3 \text{ dB}$
-10 dBm	$+10 \text{ dB} \pm 0.3 \text{ dB}$
-20 dBm	$+20 \text{ dB} \pm 0.3 \text{ dB}$
-30 dBm	$+30 \text{ dB} \pm 0.3 \text{ dB}$
-40 dBm	$+40 \text{ dB} \pm 0.3 \text{ dB}$

- Step 3: Disconnect the synthesizer from the 808 test cord. Display should read 00.
- Step 4: Set the Function Selector to the RCV LEVEL, dBm position. The 808 display should indicate a minus (–) sign with no numerals, indicating that no signal is present at the input.
- Step 5: Set the Function Selector to ATTN DIST, dB position. The 808 display should indicate no numerals and the dB LED indicator should illuminate.

NOTCHED NOISE

2.08 Test notched noise functions as follows:

FOR 808C MODELS

- Step 1: Set the 808C Function Selector to the NOTCHED position; this implies that the C-Message and notch filters are selected.
- Step 2: Adjust frequency synthesizer to 0.0 dBm output level on the AC voltmeter, and to frequencies shown in Table 2-2A. If the 808C displays the corresponding levels, proceed to paragraph 2.09. If the 808C does not display the expected levels, complete Steps 3, 4, and 5. (Note: The values shown in dBm will be dBmC (notched), during actual noise measurements with C-Notch weighting.)
- Step 3: Set the frequency synthesizer for 1010 Hz and a level of 0.0 dBm as indicated on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C display. Adjust the synthesizer frequency to 1000 Hz and adjust A3 R29 for a minimum on the 808C display. Set the synthesizer to 1020 Hz and A3 R25 for a minimum on the 808C display. Verify that the minimum values obtained at 1010 Hz and 1000 Hz have not changed; readjust R21, R25, and R29 on the A3 board, if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C corresponds to values given in the table. If necessary, perform minor adjustments on R21, R25, and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and to the frequencies given in Table 2-2B. If the 808C displays the corresponding levels, proceed to paragraph 2.09. If the 808C does not display the expected levels, repeat Steps 3, 4, and 5.

FOR 808C-11 MODELS

- Step 1: Set the 808C-11 Function Selector to the NOTCHED position; this implies that the psophometric and notch filters are selected.
- Step 2: Set the synthesizer to a 0.0 dBm output level on the AC voltmeter, and adjust it to the frequencies in Table 2-2A. The 808C-11 should display the corresponding levels given in Table 2-2A. If the 808C-11 displays the corresponding levels then proceed to paragraph 2.09. If the 808C-11 does not display the expected levels, complete Steps 3, 4, and 5.
- Step 3: Set the frequency synthesizer for 800 Hz and a level of 0.0 dBm as indicated on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C-11 display. Change the synthesizer frequency to 790 Hz and adjust A3 R29 for a minimum on the 808C-11 display. Set the synthesizer to 810 Hz and adjust A3 R25 for a minimum value on the 808C-11 display. Verify that the minimum values obtained at 800 Hz and 790 Hz have not changed. Readjust R21, R25, and R29 on the A3 board if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C-11 corresponds to the values given in the table. If necessary, perform minor adjustments on R21, R25 and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C-11. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and

to the frequencies given in Table 2-2B. If the 808C-11 displays the corresponding levels, proceed to paragraph 2.09. If the 808C-11 does not display the expected levels, repeat Steps 3, 4, and 5.

FOR 808C-12 MODELS

- Step 1: Set the 808C-12 Function Selector to the NOTCHED position; this implies that the psophometric and notch filters are selected.
- Step 2: Set the synthesizer to a 0.0 dBm output level on the AC voltmeter and adjust the synthesizer to the frequencies in Table 2-2A. The 808C-12 should show the corresponding levels given in Table 2-2A. If the 808C-12 displays the corresponding levels proceed to paragraph 2.09. If the 808C-12 does not display the expected levels, complete Steps 3, 4, and 5.
- Step 3: Set the Frequency Selector for 800 Hz and a level of 0.0 dBm as read on the AC voltmeter. Adjust A3 R21 for a minimum reading on the 808C-12 display. Change the synthesizer frequency to 790 Hz and adjust A3 R29 for a minimum on the 808C-12 display. Set the synthesizer to 810 Hz and adjust A3 R25 for a minimum value on the 808C-12 display. Verify that the minimum values obtained at 810 Hz and 790 Hz have not changed. Readjust R21, R25, and R29 on the A3 board if necessary.
- Step 4: Set the synthesizer frequency to the values given in Table 2-2A, and verify that the level indication on the 808C-12 corresponds to the values given in the table. If necessary, perform minor adjustments on R21, R25 and R29 to obtain the best overall response, per Table 2-2A.
- Step 5: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808C-12. The unit is now configured so that the 3 kHz flat and notch filters are selected. Adjust the frequency synthesizer to a 0.0 dBm output level on the AC voltmeter, and to the frequencies given in Table 2-2B. If the 808C-12 displays the corresponding levels, proceed to paragraph 2.09. If the 808C-12 does not display the expected levels, repeat Steps 3, 4, and 5.

Table 2-2A. WEIGHTED NOISE WITH NOTCH

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBrn)	808C-11 (dBm)	808C-12 (dBm)
200	200	200	65.0 ± 2.5	-21.0 ± 2.0	-21.0 ± 2.0
300	300	300	73.5 ± 1.5	-10.6 ± 1.0	-10.6 ± 1.0
400	400	400	78.6 ± 1.5	-6.3 ± 1.0	-6.3 ± 1.0
500	500	500	81.2 ± 2.7	-3.6 ± 1.0	-3.6 ± 1.0
600	600	600	84.0 ± 2.7	-2.0 ± 1.3	-2.0 ± 1.3
700	—	—	86.0 ± 2.7		
—	790	790		-70.0 ± 10	-70.0 ± 10
800	800	800	87.2 ± 2.7	-70.0 ± 10	-70.0 ± 10
—	810	810		-70.0 ± 10	-70.0 ± 10
862	—	—	87.8 ± 2.7		
995	—	—	30.0 ± 10.0		
—	1000	—		$+1.0 \pm 1.3$	
1010	—	—	20.0 ± 10.0		

table continued

Table 2-2A. WEIGHTED NOISE WITH NOTCH (Continued)

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBm)	808C-11 (dBm)	808C-12 (dBm)
1025	—	1025	30.0 ± 10.0		$+1.0 \pm 1.3$
1182	—	—	88.6 ± 2.7		
—	1200	1200		0.0 ± 1.0	0.0 ± 1.0
1300	1300	1300	88.2 ± 2.7	-0.4 ± 1.0	-0.4 ± 1.0
1500	1500	1500	87.7 ± 2.7	-1.3 ± 1.0	-1.3 ± 1.0
1700	—	—	88.8 ± 1.5		
—	1800	1800		-2.4 ± 1.0	-2.4 ± 1.0
2000	2000	2000	88.7 ± 1.5	-3.0 ± 1.0	-3.0 ± 1.0
2500	2500	2500	88.6 ± 1.5	-4.2 ± 1.0	-4.2 ± 1.0
3000	3000	3000	87.5 ± 1.5	-5.6 ± 1.0	-5.6 ± 1.0
3300	3300	3300	84.8 ± 2.5	-7.1 ± 2.0	-7.1 ± 2.0
3500	3500	3500	82.4 ± 2.5	-8.5 ± 3.0	-8.5 ± 3.0
4000	4000	4000	75.5 ± 3.5	-15.0 ± 3.0	-15.0 ± 3.0
4500	4500	4500	68.5 ± 3.5	-25.0 ± 3.0	-25.0 ± 3.0
5000	5000	5000	61.5 ± 3.5	-36.0 ± 3.0	-36.0 ± 3.0

Table 2-2B. 3 kHz FLAT WITH NOTCH

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBm)	808C-11 (dBm)	808C-12 (dBm)
40	40	40	87.0 ± 1.0	-3.0 ± 1.0	-3.0 ± 1.0
60	60	60	88.8 ± 0.5	-1.2 ± 0.5	-1.2 ± 0.5
80	80	80	89.3 ± 0.5	-0.7 ± 0.5	-0.7 ± 0.5
100	100	100	89.5 ± 0.2	-0.5 ± 0.2	-0.5 ± 0.2
120	120	120	89.7 ± 0.2	-0.3 ± 0.2	-0.3 ± 0.2
140	140	140	89.8 ± 0.2	-0.2 ± 0.2	-0.2 ± 0.2
160	160	160	89.8 ± 0.2	-0.2 ± 0.2	-0.2 ± 0.2
200	200	200	90.0 ± 0.2	0.0 ± 0.2	0.0 ± 0.2
400	400	400	90.0 ± 0.2	0.0 ± 0.2	0.0 ± 0.2
600	600	600	89.0 ± 1.5	0.0 ± 0.5	0.0 ± 0.5
—	790	790		-70.0 ± 10	-70.0 ± 10
800	800	800	89.0 ± 1.5	-70.0 ± 10	-70.0 ± 10
—	810	810		-70.0 ± 10	-70.0 ± 10
862	—	—	88.5 ± 1.5		
995	—	—	30.0 ± 10.0		
	1000	—		0.0 ± 0.5	
1010	—	—	20.0 ± 10.0		

table continued

Table 2-2B. 3 kHz FLAT WITH NOTCH (Continued)

Frequency Synthesizer Setting			Level Display on 808 Unit		
808C (Hz)	808C-11 (Hz)	808C-12 (Hz)	808C (dBrn)	808C-11 (dBm)	808C-12 (dBm)
1025	—	1025	30.0 ± 10.0		0.0 ± 0.5
1182	—	—	88.5 ± 1.5		
—	1200	1200		0.0 ± 0.2	0.0 ± 0.2
1300	1300	1300	89.0 ± 1.5	0.0 ± 0.2	0.0 ± 0.2
1600	1600	1600	89.0 ± 1.5	0.0 ± 0.5	0.0 ± 0.5
2000	2000	2000	89.0 ± 0.5	-1.0 ± 0.5	-1.0 ± 0.5
3000	3000	3000	87.0 ± 0.5	-3.0 ± 0.5	-3.0 ± 0.5

IDLE LINE

2.09 Test Idle Line Measurements as follows:

- Step 1: Set the 808 Function Selector to the IDLE LINE position; this implies that the noise weighting filter is selected.
- Step 2: Adjust the frequency synthesizer to 0.0 dBm on the AC voltmeter, and to the frequencies shown in Table 2-3A. The 808 should display corresponding levels shown for each frequency in the table.
- Step 3: Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights on the 808. The unit is now configured so that the 3 kHz filter is selected. Adjust the frequency synthesizer to 0.0 dBm on the AC voltmeter and to the frequencies shown in Table 2-3B. The 808 should display the corresponding levels for each frequency.

Table 2-3A. IDLE LINE FUNCTION WITH NOISE WEIGHTING FILTER SELECTED

Frequency Synthesizer Setting		Level Display on 808 Unit	
808C (Hz)	808C-11/C-12 (Hz)	808C (dBrn)	808C-11/C-12 (dBm)
60	60	34.3 ± 2.0	-57.0 ± 2.0
100	100	47.5 ± 2.0	-41.0 ± 2.0
200	200	64.9 ± 2.0	-21.0 ± 2.0
300	300	73.7 ± 1.0	-10.6 ± 1.0
400	400	78.8 ± 1.0	-6.3 ± 1.0
500	500	82.3 ± 1.0	-3.6 ± 1.0
600	600	85.0 ± 1.0	-2.0 ± 1.0
700	700	87.2 ± 1.0	-0.9 ± 1.0
800	800	88.7 ± 1.0	0.0 ± 0.0
900	900	89.7 ± 1.0	$+0.6 \pm 1.0$
1000	1000	90.0 ± 0.0	$+1.0 \pm 1.0$
1200	1200	89.6 ± 1.0	0.0 ± 1.0

table continued

Table 2-3A. IDLE LINE FUNCTION WITH NOISE WEIGHTING FILTER SELECTED (Continued)

Frequency Synthesizer Setting		Level Display on 808 Unit	
808C (Hz)	808C-11/12 (Hz)	808C (dBrn)	808C-11/12 (dBm)
1300	1300	89.3 ± 1.0	-0.4 ± 1.0
1500	1500	88.8 ± 1.0	-1.3 ± 1.0
1800	1800	88.7 ± 1.0	-2.4 ± 1.0
2000	2000	88.9 ± 1.0	-3.0 ± 1.0
2500	2500	88.9 ± 1.0	-4.2 ± 1.0
2800	2800	88.0 ± 1.0	-5.0 ± 1.0
3000	3000	87.0 ± 2.0	-5.6 ± 1.0
3500	3500	82.9 ± 3.0	-8.5 ± 3.0
4000	4000	75.4 ± 3.0	-15.0 ± 3.0
4500	4500	67.7 ± 3.0	-25.0 ± 3.0
5000	5000	61.3 ± 3.0	-36.0 ± 3.0

Table 2-3B. IDLE LINE FUNCTION WITH 3 kHz FLAT FILTER SELECTED

Frequency Synthesizer Setting		Level Display on 808 Unit	
808C/C-11/C-12 (kHz)		808C (dBrn)	808C-11/C-12 (dBm)
1.0		90 ± 0.2	0.0 ± 0.2
2.0		89.0 ± 0.2	-1.0 ± 0.2
3.0		87.0 ± 0.5	-3.0 ± 0.5

NOISE-TO-GROUND

2.10 Test the Noise-to-Ground function in the following manner:

- Step 1: Connect the ground or common lead of the frequency synthesizer to the sleeve common point (E1) found on the A1 board, or to the sleeve connection of the 808 test cord. Then short tip and ring (or "A" and "B") on the 808 test cord, or short the cuff link terminals J7 and J8 on the A1 board. Connect the remaining (high side) lead of the synthesizer to this shorted point.
- Step 2: Set the Function Selector to the TO GROUND position. Initial selection of the noise-to-ground function implies that the noise weighting filter will be selected.
- Step 3: Adjust the synthesizer output frequency to 1004 Hz if the unit under test is an 808C, or to 800 Hz if the unit to be tested is an 808C-11 or C-12. Set the frequency synthesizer levels on the AC voltmeter as indicated in Table 2-4. The 808 should display corresponding levels within ± 1.5 dB.
- Step 4: Depress the STEP CONTROL pushbutton to select the 3 kHz flat filter and repeat Step 3. To obtain the proper readings indicated in Table 2-4, it may be necessary to operate the 808 on its internal battery. Ground loops between the test equipment and the battery charger can cause erroneous results when the 3 kHz flat filter is used with the noise-to-ground function.

Table 2-4. TEST FOR NOISE-TO-GROUND FUNCTION

AC Voltmeter Indication	Level Display on 808 Unit	
808C/C-11/C-12 (dBm)	808C (dBrn)	808C-11/C-12 (dBm)
+ 10	100	+ 10
0	90	0
- 10	80	- 10
- 20	70	- 20

SIGNAL-TO-NOISE RATIO

2.11 Signal-to-Noise Ratio is tested as follows:

- Step 1: Connect the frequency synthesizer between tip and ring (or “A” and “B”) of the 808 test cord, or to the cuff link terminals J7 and J8.
- Step 2: Set the 808 TERM/BRDG switch to TERM, the 600/900 (150/600) switch to 600, and Function Selector to the S/N RATIO, dB position. Initial selection of the S/N function implies that the noise weighting filter will automatically be selected.
- Step 3: Adjust the synthesizer output level to 0.0 dBm on the AC voltmeter. Select an output frequency of 1004 Hz if the unit under test is an 808C, or 810 Hz if the unit to be tested is an 808C-11 or C-12. The unit under test should display $+70 \pm 10$ dB.
- Step 4: Select the 3 kHz flat filter by depressing the STEP CONTROL pushbutton and noting that the most significant decimal point lights. Repeat Step 3, taking care to avoid ground loops by operating the 808 from its internal battery.
- Step 5: Disconnect the synthesizer from tip and ring (or “A” and “B”) of the 808 test cord. The display should indicate 0.0 dB with the Hz LED blinking.

FREQUENCY ACCURACY

2.12 Test the Receiver Frequency as follows:

- Step 1: Set the Function Selector to the FREQUENCY position. The 808 display should show 00 Hz if no signal source is connected.
- Step 2: Connect the frequency synthesizer between tip and ring (or “A” and “B”) of the 808 test cord. Set synthesizer output frequency to 1004 Hz and the output level for 0.0 dBm on the AC voltmeter. The 808 should display 1004 ± 1 Hz.
- Step 3: Vary the synthesizer output frequency from 200 Hz to 4000 Hz. The 808 should display these frequencies within ± 1 Hz.
- Step 4: Adjust the synthesizer to -40 dBm on the AC voltmeter and to the frequencies between 60 Hz and 4000 Hz. The 808 should display these frequencies within ± 1 Hz.

TRANSMITTER TESTS

2.13 Transmitter tests include level measurements, holding tone accuracy, and variable oscillator accuracy which are described in the following paragraphs:

LEVEL

2.14 Test Transmit Level Measurements as follows:

- Step 1: Set the Function Selector to the LEVEL, dBm position, and set the 600/900 (or 150/600) switch to 600.
- Step 2: Connect the AC voltmeter to tip and ring (or "A" and "B") of the 808 test cord with a termination of 600 ohms.
- Step 3: Set the TRMT LEVEL thumbwheel control to +10.0 dBm (808C only), 0.0 dBm and -10.0 dBm (all three test sets) as indicated by the AC voltmeter. Note that in each case the 808 display must agree to within ± 0.1 dB. Set the TRMT LEVEL control to -20.0 dBm, -30.0 dBm and -40.0 dBm, as indicated by the AC voltmeter. Note that in each case the display on the 808 must agree to within ± 0.2 dB.
- Step 4: Set the TRMT LEVEL control to 0.0 dBm and vary the ON-VOLUME thumbwheel control from within one to ten feet (0.3 to 3 meters), and volume variations should not affect the 808 display.
- Step 5: Set the TRMT LEVEL control to 0.0 dBm and vary the ON-VOLUME thumbwheel control over its full range. A tone should be audible to the operator from within one to ten feet (0.3 to 3 meters), and volume variations should not affect the 808 display.
- Step 6: Disconnect the AC voltmeter.

HOLDING TONE TRANSMIT ACCURACY

2.15 Test holding tone transmit accuracy as follows:

Step 1A: (808C only)

Set the Function Selector to the 1004/2600 Hz position and ensure that the 808C frequency display shows 1004 +3, -2 Hz. Depress the STEP CONTROL pushbutton and ensure that the frequency display shows 2600 +3, -2 Hz. Press the STEP CONTROL pushbutton again and ensure that the display returns to 1004 Hz.

Step 1B: (808C-11/C-12 only)

Set the Function Selector to the 800/820/850 Hz position and ensure that the 808 frequency display shows 800 +3, -2 Hz. Depress the STEP CONTROL pushbutton and ensure that the frequency display shows 820 +3, -2 Hz. Depress the STEP CONTROL pushbutton again and ensure that the display shows 850 +3, -2 Hz. Further operation of the STEP CONTROL pushbutton will continue to loop the unit through these three holding tones.

- Step 2: Vary the TRMT LEVEL control through its entire range. The 808 display should show the selected holding tone frequency, except at the lowermost limits of the TRMT LEVEL control, where the display goes to 00, when the thumbwheel is rolled almost all the way back toward the "LSI Sierra" label.
- Step 3: Connect the frequency counter between tip and ring (or "A" and "B") of the 808 test cord. The counter should read the selected holding tone to within $+3$, -2 Hz. Adjust the TRMT LEVEL control, if necessary, to obtain a level sufficient to trigger the counter.

VARIABLE OSCILLATOR ACCURACY

2.16 Test the accuracy of the variable oscillator as follows:

- Step 1: Set the Function Selector to the LEVEL, dBm position and adjust the TRMT LEVEL control for an 808 display of -10.0 dBm.
- Step 2: Set the Function Selector to the AUTO SWP position and note that the 808 displays the lowest frequency available from the version under test. Then the 808 will begin sweeping the frequencies listed in Table 2-5 for the particular model being tested, within an accuracy of $+3$, to -2 Hz for each frequency step. Frequency steps should occur at five-second intervals when the unit is in the AUTO SWP position. Set the function switch to the SWP HOLD position, then momentarily depress the STEP CONTROL pushbutton, and note that the display advances to the next frequency listed in Table 2-5. This single-step mode of operation may be used across the entire sweep frequency range of the unit. Now hold down the STEP CONTROL pushbutton and note that the 808 sweeps at 0.5-second intervals until the button is released. The displayed frequency is held at the instant of release.
- Step 3: (808C only)
While the Function Selector is in the AUTO SWP position, momentarily depress the STEP CONTROL pushbutton. Note that the 808C automatically sweeps through the three frequencies given in Table 2-5 for the 808C short sweep mode.

Table 2-5. AUTO SWEEP FREQUENCIES

Model	Frequencies ($+3$, -2 Hz)
808C (long sweep mode)	304 to 4004 Hz in 100 Hz increments, with 2604 Hz omitted.
808C (short sweep mode)	404, 1004, and 2804 Hz
808C-11	200, 250, 300, 400, 600, 800, 900, 1000, 1400, 1600, 2000, 2400, 2700, 2900, 3000, 3050, 3400, 3600, 3800, 4000, 1004, 1020, and 2040 Hz
808C-12	304, 404, 504, 604, 804, 1004, 1020, 1200, 1404, 1800, 1904, 2004, 2100, 2204, 2400, 2604, 2704, 2804, 2904, 3004, 3254, 3354, 800, 820 and 850 Hz.

- Step 4: Adjust the ON-VOLUME control for a reasonably audible level and set the Function Selector to the AUTO SWP position. Check for the sound level remaining audible over the complete sweep range.

- Step 5: Set the Function Selector to the SWP HOLD position. The 808 should display the selected frequency steadily.
- Step 6: Set the Function Selector to the AUTO SWP position. The 808 should resume frequency sweeping at five-second intervals.
- Step 7: Set the Function Selector to the SWP HOLD position, then back to AUTO SWP. Repeat several times. The 808 should sweep one step upward at approximately a five-second interval after each repeat. (Note: This tests both Function Selector switch and auto/sweep/hold software.)
- Step 8: Disconnect the frequency counter (if connected during paragraph 2.15, Step 5), from tip and ring (or "A" and "B") of the 808 test cord and connect an AC voltmeter in its place.
- Step 9: Set the Function Selector to the AUTO SWP position, and the 600/900 (or 150/600) switch to 600 ohms. Terminate the 808 with 600 ohms and ensure that the 808 output level (as monitored on the AC voltmeter) remains constant within ± 0.2 dB throughout the sweep range.
- Step 10: Disconnect the AC voltmeter.

SUBASSEMBLIES

2.17 The Display/Selector Board (A1), the CPU Board (A2) and the Signal Board (A3) are tested and calibrated as described in the following sections. Some tests, which may seem redundant, are present to permit mass testing of individual subassemblies.

DISPLAY/SELECTOR BOARD, A1

2.18 Display/Selector Board calibration includes voltage, impedance (termination and bridging) and Function Selector tests as described in the following paragraphs:

VOLTAGE

2.19 The following test is for voltage verification at several points on the A1 board:

Step 1: Connect the A1 board to the frequency synthesizer and digital multimeter as shown in Figure 2-2.

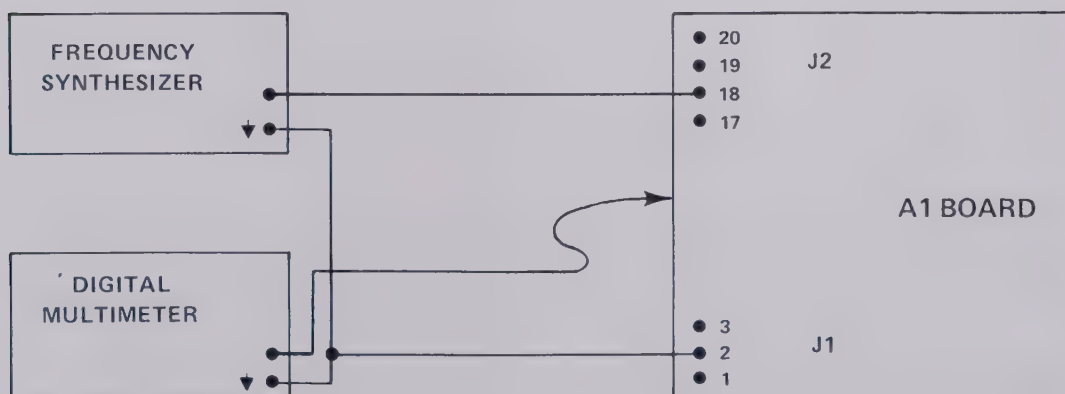


Figure 2-2. Equipment Set-Up

- Step 2: Connect the battery pack harness to J4 and insert the charger plug into J6.
- Step 3: Roll the 808 ON-VOLUME control forward to On.
- Step 4: Set the frequency synthesizer to 32 kHz, square wave, 5 Vp-p. With the digital multimeter ground at J1-2, check the following voltages:

PIN NUMBER	VOLTAGE
J1-1	+ 5 V $\pm$ 0.3 V
J1-3	- 5 V $\pm$ 0.3 V
J2-22	+ 5 V $\pm$ 0.3 V
J2-24	- 5 V $\pm$ 0.2 V
J2-21	+ 10 V

- Step 5: Roll the ON-VOLUME control back until it clicks to Off.
- Step 6: Disconnect the frequency synthesizer and digital multimeter.
- Step 7: Connect the digital multimeter to J4, with ground lead to pin 2. Voltage should be greater than + 16.0 volts.

IMPEDANCE

2.20 Check impedances as follows:

(808C only)

- Step 1: Set a digital multimeter to the ohms function. A multimeter which has a low applied-voltage ohms function (0.5 V or less) should be used for the following tests, to ensure that no PN junctions will be turned on in the line driver or receiver circuits.
- Step 2: Connect the digital multimeter to J1 pins 10 and 11 of the 808C A1 board.
- Step 3: Set the 600/900 switch to the 600 position. The digital multimeter should read 3240 ohms $\pm$ 33 ohms.
- Step 4: Now set the 600/900 switch to the 900 position. The digital multimeter should read 4870 ohms $\pm$ 49 ohms.
- Step 5: Disconnect the multimeter from pins 10 and 11, and reconnect to J1 pins 6 and 7.
- Step 6: Set the TERM/BRDG switch to the TERM position, and set the 600/900 switch to the 600 position. The digital multimeter should read 604 ohms $\pm$ 7 ohms.
- Step 7: Now set the 600/900 switch to the 900 position. The digital multimeter should read 905 ohms $\pm$ 10 ohms.
- Step 8: Set the TERM/BRDG switch to BRDG. The multimeter should read greater than 50k ohms.
- Step 9: Disconnect the digital multimeter.

(808C-11 and C-12 only)

- Step 1: Set a digital multimeter to the ohms function. A multimeter which has a low applied-voltage ohms function (0.5 V or less) should be used for the following tests to ensure that no PN junctions will be turned on in the line driver or receiver circuits.
- Step 2: Connect the digital multimeter to J1 pins 10 and 11 of the 808C-11 or C-12 A1 board.
- Step 3: Set the 150/600 switch to the 150 position. The digital multimeter should read 301 ohms $\pm$ 4 ohms.
- Step 4: Now set the 150/600 switch to the 600 position. The digital multimeter should read 1204 ohms $\pm$ 13 ohms.
- Step 5: Disconnect the multimeter from pins 10 and 11 and reconnect to J1 pins 6 and 7.
- Step 6: Set the TERM/BRDG switch to the TERM position and the 150/600 switch to the 150 position. The digital multimeter should read 150 ohms $\pm$ 2 ohms.
- Step 7: Now set the 150/600 switch to the 600 position. The digital multimeter should read 603 ohms $\pm$ 7 ohms.
- Step 8: Set the TERM/BRDG switch to BRDG. The multimeter should read greater than 50k ohms.
- Step 9: Disconnect the digital multimeter.

FUNCTION SELECTOR

2.21 The various functions of the selector switch are tested as follows:

- Step 1: Connect the A1 board to A2 and A3 boards which are known to be working. (If no such boards are available, the unit must be returned to the factory.) Connect the AC voltmeter to the tip and ring (or "A" and "B") terminals of the 808 test cord. Connect a 600 ohm, $\frac{1}{4}$ W, 1 percent resistor between the voltmeter terminals. Set the TERM/BRDG switch of the 808 under test to the BRDG position.
- Step 2: Set the Function Selector to the DIAL position and turn the unit on. During initialization, the display should show "+ 888.8" and dB and Hz LEDs should be on. After initialization the dB and Hz LEDs should go off and the display should show a minus sign at the extreme left. Depress the STEP CONTROL pushbutton and note that the most significant decimal point lights.
- Step 3: Set the Function Selector to LEVEL, dBm position and note that the dB LED lights. Adjust the TRMT LEVEL thumbwheel and verify that the unit displays from +9.9 to -40.0 dBm, if the unit under test is an 808C, or C-11. If the unit under test is an 808C-12, adjustment of the thumbwheel should result in a display variation from 0.0 to -40.0 dBm.
- Step 4: Set the function switch to the 1004/2600 Hz position for an 808C, or the 800/820/850 Hz position for an 808C-11 or C-12. The display should show the selected holding tone to within +2, -1 Hz, with the Hz LED lit. Adjust the ON-VOLUME control to verify that the speaker volume changes, and that the sound has no more than a slight cone rattle.

- Step 5: Set the Function Selector switch to the AUTO SWP position and check for tone sweeping. (See Table 2-5 for frequency sweep range.) Verify that the speaker works for all frequencies, without undue rattle.
- Step 6: Set the Function Selector to the SWP HOLD and note that the frequency then being displayed is held. Depress the STEP CONTROL pushbutton and note that the unit sweeps rapidly. Note that when the STEP CONTROL pushbutton is released, the frequency currently displayed is held.
- Step 7: Set the Function Selector to the FREQUENCY position. The display should show 00 with the Hz LED lit, when no signal is applied. Connect the frequency synthesizer to tip and ring (or “A” or “B”) of the 808 test cord, or to the cuff link terminals J7 and J8 on the A1 board. The 808 must display the synthesizer frequency to within $+3, -2$ Hz over a range of 200 Hz to 4000 Hz for synthesizer output levels between $+9.9$ to -40.0 dBm, as measured by the AC voltmeter.
- Step 8: Disconnect the frequency synthesizer from the 808 test cord and switch the Function Selector to the RCV LEVEL, dBm position. The 808 should display a negative sign at the left-hand side of the display, implying underrange condition.
- Step 9: Reconnect the synthesizer to tip and ring (or “A” and “B”) of the 808 test cord, or to the cuff link terminals J7 and J8 on the A1 board. Set the frequency synthesizer to 1004 Hz for an 808C, or 810 Hz for an 808C-11 or C-12, and adjust the output level to 0.0 dBm as indicated by the AC voltmeter. The 808 under test must display $0.0 \text{ dBm} \pm 0.2 \text{ dB}$.
- Step 10: Set the Function Selector to the ATTN DIST, dB position and verify that the display momentarily shows 1004 Hz for an 808C, or 810 Hz for an 808C-11 or C-12. After momentarily displaying the frequency, the 808 should then display 0.0 dB.
- Step 11: Set the Function Selector to the S/N RATIO, dB position and note that the display shows 70 ± 10 dB. Disconnect the synthesizer without changing any synthesizer settings. The display should show 0.0 with the dB LED lit and the Hz LED blinking.
- Step 12: Reconnect the Frequency Synthesizer and set the Function Selector to the NOTCHED position. The unit under test should read $20 \text{ dBm} \pm 10 \text{ dB}$ for an 808C, or $-70 \text{ dBm} \pm 10 \text{ dB}$ if the unit under test is an 808C-11 or C-12.
- Step 13: Set the Function Selector to the IDLE LINE position and verify a display of $90 \text{ dBm} \pm 0.5 \text{ dB}$ for an 808C, or $0.0 \text{ dBm} \pm 0.5 \text{ dB}$ for the models 808C-11 or C-12.
- Step 14: Set the Function Selector to the TO GROUND position. Connect the ground or common lead of the frequency synthesizer to the analog common point (E1) found on the A1 board, or to the sleeve or ground connection of the 808 test cord. Short tip and ring (or “A” and “B”) on the 808 test cord, or short the cuff link terminals J7 and J8 on the A1 board. Connect the remaining (high side) lead of the synthesizer to this shorted point. The model 808C should display $90 \text{ dBm} \pm 1.5 \text{ dB}$; and models 808C-11 and C-12 should display $0.0 \text{ dBm} \pm 1.5 \text{ dB}$, if the synthesizer settings from previous steps have been left undisturbed.

- Step 15: Repeat Steps 11 through 15, depressing the STEP CONTROL pushbutton to select the 3 kHz flat filter for each case. The 808 under test should be powered by its internal battery when the 3 kHz flat filter is used, to prevent errors due to the injection of ground loop noise at power line frequencies.
- Step 16: Disconnect the frequency synthesizer and set the Function Selector to the DIAL position. Connect a variable 0 to 50 VDC power supply, as shown in Figure 2-3, and adjust its output to 36 V. Switch the power supply meter to measure current and observe that when the 808's STEP CONTROL pushbutton is depressed, a current equal to or greater than 23 mA, but not more than 40 mA, is indicated. To release the holding circuit, the 808 Function Selector must be rotated to any position other than DIAL, and then returned to the DIAL position.
- Step 17: Turn the 808 assembly off and disconnect the A1 board from the A2 and A3 boards.

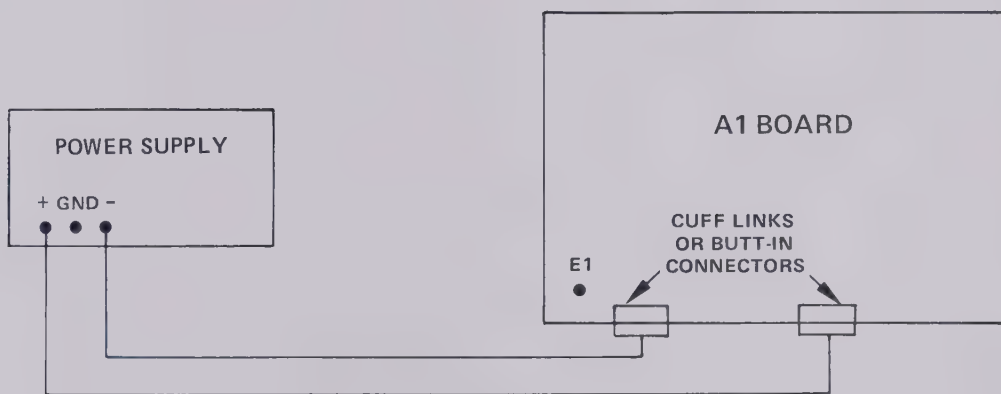


Figure 2-3. Power Supply to Cuff Link Connections

CPU BOARD, A2

- 2.22 Calibration of the A2 CPU board involves the adjustment of the Low Battery Detection Threshold.
- Step 1: The Low Battery Threshold on the A2 board must be adjusted together with the A1 board that will be coassembled with it, into a complete 808 series test set. Control A2 R42 is adjusted to compensate for tolerance in the voltage regulators located on the A1 board. This calibration of A2 requires that it be paired with the A1 board to be used in the finished unit. Connect A1 and A2 using the attached ribbon cables.
- Step 2: Set an adjustable DC supply to 11 V and connect it to J4 on the A1 board ensuring that the positive lead connects to pin 1, and that the negative lead connects to pin 2.
- Step 3: Turn on the 808. Measure the voltage at the wiper of A2 R42 relative to analog common, using a digital multimeter. Adjust A2 R42 until the digital multimeter shows +0.10 V. When the preceding

adjustment is properly made, the unit should repeatedly execute the self-check. During the self-check, the display indicates +888.8 while the audio output reverse sweeps from high to low frequencies.

- Step 4: Increase the voltage applied at J4 on the A1 board to +12 VDC. The 808 under test should complete the self-check mode and proceed with the function selected. As the external supply becomes more positive the voltage measured between the wiper of A2 R42 and analog common should become more negative.
- Step 5: Slowly reduce the voltage applied by the external supply from +12 V to +11 V. The 808 under test should function normally until the external supply voltage reaches +11 V, at which time the unit should begin to repeat the self-check.

NOTE

The Low Battery Detection circuit is not used on early 808C test sets manufactured for sale in the United States. Thus, adjustments of A2 R42 will have no effect on these units.

SIGNAL BOARD, A3

2.23 Calibration of the A3 signal board consists of CMRR (common mode rejection readings), notch filter adjustments, and tests of several functions printed on the Function Selector switch plate, including receive level, attenuation distortion, frequency, notch, idle line, noise-to-ground, signal-to-noise ratio, and transmit level.

CMRR

2.24 To perform the CMRR adjustments, complete the following steps:

- Step 1: Connect ground of the power supply, frequency synthesizer, and AC voltmeter to J2-2 of the A3 board, as shown in Figure 2-4. Connect the +5 V of the power supply to J2-1, and the -5 V to J2-3.

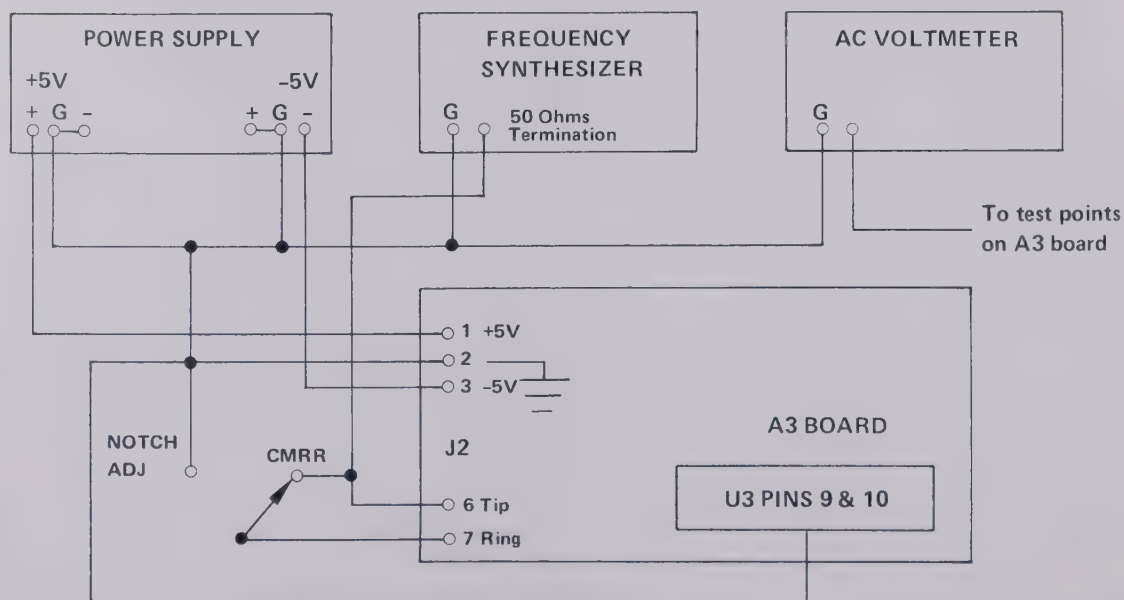


Figure 2-4. CMRR Adjustment Test Equipment Set-Up

- Step 2: Connect the test signal of the frequency synthesizer to J2-6 and J2-7; then connect U3, pins 9 and 10 to ground. Set the synthesizer to +10.0 dBm and 550 Hz.
- Step 3: Connect the AC voltmeter to U5, pin 1.
- Step 4: Adjust A3 R63 for the minimum level indication on the AC voltmeter which should be –50 dBm or less.

NOTCH FILTER

2.25 Adjust the notch filter as follows:

- Step 1: The power and ground connections remain the same as in paragraph 2.24 Steps 1 and 2. Disconnect the synthesizer from J2-7 and reconnect J2-7 to ground.
- Step 2: Set the frequency synthesizer for 0.0 dBm; and, 1010 Hz for an 808C, 800 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 14.
- Step 3: Adjust A3 R21 to a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 4: Set the frequency synthesizer to 0.0 dBm; and, 1020 Hz for an 808C, 810 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 1.
- Step 5: Adjust A3 R25 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 6: Set the frequency synthesizer to 0.0 dBm; and, 1000 Hz for an 808C, 790 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U15, pin 1.
- Step 7: Adjust A3 R29 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 8: **(808C only)** Set the frequency synthesizer to 826 Hz. The AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 9: **(808C only)** Set the frequency synthesizer to 1182 Hz and the AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 10: Turn the power off and disconnect the A3 board from all test equipment.

FUNCTION SELECT

2.26 Function select tests are performed as follows:

- Step 1: Connect an A3 board under test, to an 808 unit with A1, A2 boards, and a battery pack, which are known to be working.
- Step 2: Connect the 808 unit, frequency synthesizer, and AC voltmeter in accordance with paragraph 2.05.

- Step 3: Receive level:
Complete Steps 1–3 of paragraph 2.06.
- Step 4: Attenuation Distortion:
Complete Step 1 of paragraph 2.07.
- Step 5: Frequency:
Set the frequency synthesizer to 1004 Hz and +10.79 dBm. Set the Function Selector to the FREQUENCY position, and ensure a display of 1004 Hz.
- Step 6: Notch:
Set the Function Selector to the NOTCHED position and complete Step 2 of paragraph 2.08.
- Step 7: Idle Line:
Complete Steps 1–3 of paragraph 2.09.
- Step 8: Noise-To-Ground:
Complete Steps 1–4 of paragraph 2.10.
- Step 9: Signal-To-Noise Ratio:
Complete Steps 1–4 of paragraph 2.11.
- Step 10: Transmit Level:
Complete Steps 1–6 of paragraph 2.14.

OPERATIONAL TESTS

- 2.27 When the set is first powered on, the microprocessor automatically performs a self-check that includes lighting all indicators. The digital display will briefly display +888.8 and the dB and Hz indicators will light.
- 2.28 The following short functional tests will verify that the 808 is in working order.
- Step 1: Connect the tip and ring (or “A” and “B”) terminals of the 808 test cord to an AC voltmeter capable of measuring in dBm when terminated with a 600 ohm resistance. Connect a 600 ohm, $\frac{1}{4}$ W, 1 percent resistor between the AC voltmeter input terminals.
- Step 2: Turn on the 808 under test and wait for the unit to complete the self-check described in paragraph 2.27. Set the 808 TERM/BRDG switch to BRDG.
- Step 3: Set the Function Selector to the LEVEL, dBm position. Adjust the TRMT LEVEL control until the AC voltmeter indicates 0.0 dBm. Then ensure that the 808 display shows 0.0 dBm $\pm$ 0.2 dB.
- Step 4: Leave the AC voltmeter connected, and in addition connect a frequency synthesizer to the tip and ring (or “A” and “B”) terminals of the 808 test cord. Adjust the synthesizer to a frequency of 1004 Hz and an output level of 0.0 dBm, as measured by the AC voltmeter.
- Step 5: Set the Function Selector to the FREQUENCY position and ensure that the 808 display shows 1004 Hz to within +3, –2 Hz.

- Step 2: Connect the test signal of the frequency synthesizer to J2-6 and J2-7; then connect U3, pins 9 and 10 to ground. Set the synthesizer to +10.0 dBm and 550 Hz.
- Step 3: Connect the AC voltmeter to U5, pin 1.
- Step 4: Adjust A3 R63 for the minimum level indication on the AC voltmeter which should be –50 dBm or less.

NOTCH FILTER

2.25 Adjust the notch filter as follows:

- Step 1: The power and ground connections remain the same as in paragraph 2.24 Steps 1 and 2. Disconnect the synthesizer from J2-7 and reconnect J2-7 to ground.
- Step 2: Set the frequency synthesizer for 0.0 dBm; and, 1010 Hz for an 808C, 800 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 14.
- Step 3: Adjust A3 R21 to a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 4: Set the frequency synthesizer to 0.0 dBm; and, 1020 Hz for an 808C, 810 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U13, pin 1.
- Step 5: Adjust A3 R25 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 6: Set the frequency synthesizer to 0.0 dBm; and, 1000 Hz for an 808C, 790 Hz for the 808C-11 or the 808C-12. Then connect the AC voltmeter to U15, pin 1.
- Step 7: Adjust A3 R29 for a minimum indication on the AC voltmeter, which should be –60 dBm or less.
- Step 8: **(808C only)** Set the frequency synthesizer to 826 Hz. The AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 9: **(808C only)** Set the frequency synthesizer to 1182 Hz and the AC voltmeter should indicate –16.8 to –19.8 dBm.
- Step 10: Turn the power off and disconnect the A3 board from all test equipment.

FUNCTION SELECT

2.26 Function select tests are performed as follows:

- Step 1: Connect an A3 board under test, to an 808 unit with A1, A2 boards, and a battery pack, which are known to be working.
- Step 2: Connect the 808 unit, frequency synthesizer, and AC voltmeter in accordance with paragraph 2.05.

- Step 3: Receive level:
Complete Steps 1–3 of paragraph 2.06.
- Step 4: Attenuation Distortion:
Complete Step 1 of paragraph 2.07.
- Step 5: Frequency:
Set the frequency synthesizer to 1004 Hz and +10.79 dBm. Set the Function Selector to the FREQUENCY position, and ensure a display of 1004 Hz.
- Step 6: Notch:
Set the Function Selector to the NOTCHED position and complete Step 2 of paragraph 2.08.
- Step 7: Idle Line:
Complete Steps 1–3 of paragraph 2.09.
- Step 8: Noise-To-Ground:
Complete Steps 1–4 of paragraph 2.10.
- Step 9: Signal-To-Noise Ratio:
Complete Steps 1–4 of paragraph 2.11.
- Step 10: Transmit Level:
Complete Steps 1–6 of paragraph 2.14.

OPERATIONAL TESTS

- 2.27 When the set is first powered on, the microprocessor automatically performs a self-check that includes lighting all indicators. The digital display will briefly display +888.8 and the dB and Hz indicators will light.
- 2.28 The following short functional tests will verify that the 808 is in working order.
- Step 1: Connect the tip and ring (or “A” and “B”) terminals of the 808 test cord to an AC voltmeter capable of measuring in dBm when terminated with a 600 ohm resistance. Connect a 600 ohm, ¼ W, 1 percent resistor between the AC voltmeter input terminals.
- Step 2: Turn on the 808 under test and wait for the unit to complete the self-check described in paragraph 2.27. Set the 808 TERM/BRDG switch to BRDG.
- Step 3: Set the Function Selector to the LEVEL, dBm position. Adjust the TRMT LEVEL control until the AC voltmeter indicates 0.0 dBm. Then ensure that the 808 display shows 0.0 dBm $\pm$ 0.2 dB.
- Step 4: Leave the AC voltmeter connected, and in addition connect a frequency synthesizer to the tip and ring (or “A” and “B”) terminals of the 808 test cord. Adjust the synthesizer to a frequency of 1004 Hz and an output level of 0.0 dBm, as measured by the AC voltmeter.
- Step 5: Set the Function Selector to the FREQUENCY position and ensure that the 808 display shows 1004 Hz to within +3, –2 Hz.

- Step 6: Set the Function Selector to the RCV LEVEL, dBm position, and ensure that the 808 displays 0.0 dBm $\pm$ 0.2 dB.
- Step 7: Disconnect the frequency synthesizer and the AC voltmeter from the 808 test cord. Rotate the Function Selector switch through its various positions and verify that the unit responds as indicated in Table 2-6.

Table 2-6. FINAL OPERATION TESTING

Function Selector	Display or Action	Comments
DIAL	“—” at left-hand side	silent
DIAL with pushbutton depressed	“—” at left-hand side m.s.d.* decimal point lit	silent
LEVEL, dBm	level in dBm	audible tone
1004/2600 Hz (808C only)	1004/2600 Hz (change with p.b.)	audible tone
800/820/850 Hz (808C-11 and C-12)	800/820/850 Hz (change with p.b.)	audible tone
AUTO SWP	sweeps frequencies listed in Table 2-5	audible tones
SWP HOLD	holds any frequency	audible tone
FREQUENCY	00 Hz	silent
RCV LEVEL, dBm	“—” at left-hand side and dB LED on	silent
ATTN DIST, dB	blank display with dB LED on	silent
S/N RATIO, dB	0.0 dB w/ dB LED on and Hz LED flashing	max. noise level (C/C-11) silent (C-12)
NOTCHED	blank display with dB LED on	max. noise level (C/C-11) silent (C-12)
IDLE LINE	blank display	max. noise level (C/C-11) silent (C-12)
TO GROUND	blank display	max. noise level (C/C-11) silent (C-12)

*most significant digit decimal point.

3. TECHNICAL DATA

SPECIFICATIONS

- 3.01 Specifications for the three different models, 808C, 808C-11 and 808C-12, are listed in Tables 3-1, 3-2 and 3-3.

Table 3-1. 808C SPECIFICATIONS (U.S.)

TRANSMITTER

Level:	–40 to 9.9 dBm, continuously adjustable, equal power into 600 or 900 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warmup
Frequency Stability:	Less than 0.1%/hr drift, after 5 minute warmup
Harmonic distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 900 ohms

Holding Tone

Frequency:	1004 Hz
Accuracy:	–2 to +3 Hz

Signaling Tone

Frequency:	2600 Hz
Accuracy:	–2 to +3 Hz

Variable Oscillator

Long Sweep Plan:	304, 404, 504, 604, 704, 804, 904, 1004, 1104, 1204, 1304, 1404, 1504, 1604, 1704, 1804, 1904, 2004, 2104, 2204, 2304, 2404, 2504, 2704, 2804, 2904, 3004, 3104, 3204, 3304, 3404, 3504, 3604, 3704, 3804, 3904, and 4004 Hz
Accuracy:	–2 to +3 Hz

Variable Oscillator

Short Sweep Plan:	404, 1004, and 2804 Hz
Accuracy:	–2 to +3 Hz
Flatness:	±0.2 dB, relative to 1004 Hz
Sweep Control:	Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency

RECEIVER

Level Measurements

Frequency Range:	200 Hz to 4000 Hz
Level Range:	–50 dBm to +9.9 dBm

table continued

Table 3-1. 808C SPECIFICATIONS (U.S.) (Continued)**RECEIVER (Continued)**

Level Accuracy: ± 0.1 dB at 1004 Hz, 0 to -19 dBm
 ± 0.2 dB at 1004 Hz, -20 to -50 dBm
 ± 0.2 dB at all other frequencies

Range Selection: Automatic

Detector: Averaging

Noise Measurements**Level Range**

Metallic: 10 to 90 dBrn ± 0.3 dB (dBrnC, if C-Message filter is used)

To Ground: 50 to 130 dBrn ± 1.5 dB (dBrnC, if C-Message filter is used)

Weighting: C-Message or 3 kHz flat filter

Range Detection: Automatic

Detector: True RMS

Attenuation Distortion Measurements

Range: -3 to $+12$ dB, ± 0.3 dB

Range Selection: Automatic

Signal-to-Noise Measurements

Range: 20 to 50 dB ± 1 dB

Range selection: Automatic

Frequency Counter

Resolution: ± 1 Hz

Range: 60 Hz to 4000 Hz ± 1 Hz

Level Range: -50 dBm to $+9.9$ dBm

Range Selection: Automatic

Impedance: 600 ohms, 900 ohms, and bridging

Bridging Impedance: Equal to or greater than 50k ohms

Return Loss: 30 dB at all frequencies

Holding Circuit

DC Current: 23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum

POWER REQUIREMENTS

Battery: Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated

Battery Voltage: ~ 12 VDC, nominal

Battery Current: ~ 150 mA, quiescent (DIAL position)

Battery charge life: 3 hours continuous use at 68°F (20°C)

Battery charging method: External battery charger, 12 hours for full charge

table continued

Table 3-1. 808C SPECIFICATIONS (U.S.) (Continued)

ENVIRONMENTAL/PHYSICAL	
Temperature	
Operating:	0°C to +50°C (+32°F to +122°F)
Storage:	–40°C to +60°C (–40°F to 140°F)
Input Circuit Protection	
Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals
MISCELLANEOUS	
Enclosure:	Molded High Impact ABS (Acrylonitrile Butadiene Styrene) plastic, beige color
Weight	Less than 3.8 lbs (1.7 kg)
Dimensions	
Length:	10 inches (25.4 cm)
Width:	4.5 inches (11.4 cm)
Depth:	2.25 inches (5.7 cm)

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN)

TRANSMITTER	
Level:	–40 to 9.9 dBm, continuously adjustable, equal power into 600 or 150 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warm-up
Harmonic distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 150 ohms
Holding Tones	
Frequency:	800/820/850 Hz
Accuracy:	+3 Hz to –2 Hz
Variable Oscillator	
Frequency:	200, 250, 300, 400, 600, 800, 900, 1000, 1400, 1600, 2000, 2400, 2700, 2900, 3000, 3050, 3400, 3600, 3800, 4000, 1004, 1020, and 2040 Hz
Accuracy:	+3 to –2 Hz
Flatness:	±0.2 dB, relative to 800 Hz

table continued

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN) (Continued)**Variable Oscillator (Continued)**

Sweep Control: Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold
 Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency

RECEIVER**Level Measurements**

Frequency Range: 200 Hz to 5000 Hz
 Level Range: -50 dBm to +9.9 dBm
 Level Accuracy: ± 0.2 dB at 800 Hz, 0 dBm to -19 dBm
 ± 0.2 dB at 800 Hz, -20 dBm to -50 dBm
 ± 0.3 dB at all frequencies above 4000 Hz
 Range Selection: Automatic
 Detector: Averaging

Noise Measurements**Level Range**

Metallic: 0 to -80 dBm ± 1 dB
 To Ground: -40 dBm to +40 dBm ± 1.5 dB
 Weighting: Psophometric or 3 kHz flat filter
 Range Selection: Automatic
 Detector: True RMS

Attenuation Distortion Measurements

Range: -12 to +3 dB, ± 0.3 dB
 Range Selection: Automatic

Signal-to-Noise Measurements

Range: 20 dB to 50 dB ± 1 dB
 Range selection: Automatic

Frequency Counter

Resolution: ± 1 Hz
 Range: 60 Hz to 5000 Hz ± 1 Hz
 Level Range: -50 dBm to +9.9 dBm
 Range Selection: Automatic

Impedance: 600 ohms, 150 ohms, and bridging

Bridging Impedance: Equal to or greater than 50k ohms

Return Loss: 30 dB at all frequencies

Holding Circuit

DC Current: 23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum

table continued

Table 3-2. 808C-11 SPECIFICATIONS (EUROPEAN) (Continued)**POWER REQUIREMENTS**

Battery:	Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated
Battery Voltage:	~ 12 VDC, nominal
Battery Current:	~ 150 mA, quiescent (DIAL position)
Battery charge life:	3 hours continuous use at 20°C (68 °F)
Battery charging method:	External battery charger, 12 hours for full charge

ENVIRONMENTAL/PHYSICAL**Temperature**

Operating:	0°C to +50°C (+32°F to +122°F)
Storage:	–40°C to +60°C (–40°F to 140°F)

Input Circuit Protection

Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals

MISCELLANEOUS

Enclosure:	Molded high impact ABS (Acrylonitrile Butadiene Styrene), beige color
Weight:	Less than 1.6 kg (3.5 lb)

Dimensions

Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.)

TRANSMITTER	
Level:	–40 dBm to 0.0 dBm, continuously adjustable, equal power into 600 or 150 ohms
Level Stability:	Less than 0.05 dB/hr variation, after 5-minute warm-up
Frequency Stability:	Less than 0.1%/hr drift, after 5-minute warmup
Harmonic Distortion plus Noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 150 ohms
Holding Tones	
Frequency:	800/820/850 Hz
Accuracy:	+3 Hz to –2 Hz
Variable Oscillator	
Frequency:	304, 404, 504, 604, 804, 1004, 1020, 1200, 1404, 1800, 1904, 2004, 2100, 2204, 2400, 2604, 2704, 2804, 2904, 3004, 3254, 3354, 800, 820, and 850 Hz.
Accuracy:	+3 Hz to –2 Hz
Flatness:	±0.2 dB, relative to 800 Hz
Sweep Control:	Automatic—approximately 5 seconds per frequency; can be stopped for longer periods using sweep hold Manual—approximately 2 frequencies per second; can be stopped for longer periods at any frequency
RECEIVER	
Level Measurements	
Frequency Range:	200 Hz to 5000 Hz
Level Range:	–50 dBm to +9.9 dBm
Level Accuracy:	±0.2 dB at 800 Hz, 0 dBm to –19 dBm ±0.2 dB at 800 Hz, –20 dBm to –50 dBm ±0.3 dB at all other frequencies from 200 Hz to 4.0 kHz
Range Selection:	Automatic
Detector:	Averaging
Noise Measurements	
Level Range	
Metallic:	0 dBm to –80 dBm ±1 dB
To Ground:	–40 dBm to +40 dBm ±1.5 dB
Weighting:	Psophometric or 3 kHz flat filter
Range Selection:	Automatic
Detector:	True RMS

table continued

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.) (Continued)

Attenuation Distortion Measurements	
Range:	– 12 to +3 dB, ± 0.3 dB
Range Selection:	Automatic
Signal-to-Noise Measurements	
Range:	20 dB to 50 dB ± 1 dB
Range selection:	Automatic
Frequency Counter	
Resolution:	± 1 Hz
Range:	60 Hz to 4 kHz ± 1 Hz
Level Range:	– 50 dBm to +9.9 dBm
Range Selection:	Automatic
Impedance:	600 ohms, 150 ohms, and Bridging Loss: ± 0.2 dB
Bridging Impedance:	Equal to or greater than 50k ohms
Return Loss:	25 dB at all frequencies
Holding Circuit	
DC Current:	23 mA minimum at 17 VDC to 50 VDC of either polarity; 40 mA maximum
POWER REQUIREMENTS	
Battery:	Rechargeable 10-cell nickel-cadmium battery pack; 500 mA-hr rated
Battery Voltage:	~ 12 VDC, nominal
Battery Current:	~ 150 mA, quiescent (DIAL position)
Battery Charge Life:	3 hours continuous use at 20°C (68°F)
Battery Charging Method:	External battery charger, 12 hours for full charge
ENVIRONMENTAL/PHYSICAL	
Temperature	
Operating:	0°C to +50°C (+32°F to +122°F)
Storage:	–40°C to +60°C (–40°F to 140°F)
Input Circuit Protection	
Electrical surge: (lightning induction)	Max. 600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals

— table continued —

Table 3-3. 808C-12 SPECIFICATIONS (B.P.O.) (Continued)

MISCELLANEOUS	
Enclosure:	Molded High Impact ABS (Acrylonitrile Butadiene Styrene) plastic, navy blue color
Weight:	Less than 1.6 kg (3.5 lb)
Dimensions	
Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)

ORDERING INFORMATION

3.02 All models are supplied with a NiCad battery pack. Each model has a captive cord and test plug as shown in Table 3-4. The 808C is also furnished with a charger and two adapters. The 808C-11 has several optional chargers which must be ordered separately. The charger for the 808C-12 is currently supplied by the user. A canvas carrying case and viewing hood are optional for all models. These accessories are listed in Table 3-5.

Table 3-4. 808C SERIES CORDS AND PLUGS

Model	Captive Test Cord Termination	Adapters
808C	Bantam T/R/S plug (0.173"/4.4 mm dia)	Bantam jack to 310 plug; and Bantam jack to alligator clips
808C-11	"Siemens" plug (triple banana)	None
808C-12	Two expansion-pin plugs (single banana) and a crocodile (alligator) clip	None

Table 3-5. ACCESSORIES

Sierra Part Number	Description
C03295600	Replacement Battery Pack
917300512	Charger (808C), 115 VAC
917300513	Charger (808C-11) 220 VAC 50/60 Hz with U.S. style plug
917300514	Charger (808C-11) 230 VAC 50 Hz with European turret terminals
917300518	Charger (808C-11) 220 VAC 50/60 Hz with International Europlug
917300519	Charger (808C-11) 240 VAC 50 Hz with International Australian/New Zealand plug
914400041	Adapter (808C) Bantam jack to 310 plug
916400102	Adapter (808C) Bantam jack to alligator clips
921000079	Canvas Carrying Case
922000008	Viewing Hood

RECOMMENDED SPARE PARTS

3.03 Tables 3-6 and 3-7 show the recommended spare parts for those who plan to repair the 808C, 808C-11 or 808C-12. This list is derived from the factory service records for these instruments. The quantities shown are planned for one unit in the field. These spares should be doubled if four units are to be maintained and tripled for eight units.

Table 3-6. INTERNAL COMPONENTS

Sierra Part Number	Description	Board Location			Qty
		A1	A2	A3	
901100392	Capacitor, Polypropylene, 0.0039 uF 10%, 200V		C31		2
912200213	Crystal, 1.048576 MHz		Y1		1
920204046	I.C. 4046B CMOS		U33		1
920204052	I.C. 4052B CMOS			U3	1
920207442	I.C. 74C42 CMOS		U5, U6		
920210072	I.C. TL072 JFET op amp			U5	1
920210082	I.C. TL082 JFET op amp	U15	U35		1
920210084	I.C. TL084 JFET op amp		U10	U8, U13, U18, U19	2
920220082	I.C. TL082A JFET op amp			U11	1
920220084	I.C. TL084A JFET op amp		U12	U9, U15	2
920274107	I.C. 74C107 CMOS		U32		1
920274373	I.C. 74C373 CMOS	U10, U11	U28, U34		2
920274374	I.C. 74C374 CMOS		U26, U27, U29, U30		2

Table 3-7. EXTERNAL PARTS

Sierra Part Number	Description	Qty
C03294200	(808C) Captive cord with Bantam plug	1
C03319100	(808C-11) Captive cord with a Siemens CF connector	1
C03455100	(808C-12) Captive cord with two pin-plug line leads and a crocodile clip ground lead	1
	One set of the appropriate accessories from Table 3-5 is also recommended.	

4. SCHEMATICS AND PARTS LISTS

4.01 Following is a list of schematic diagrams and parts lists for Sierra 808C, 808C-11, and 808C-12.

Drawing Number	Description	Instrument
D03484600	Interconnect Diagram	808C, 808C-11, 808C-12
D03430800	A1 Schematic Diagram Display/Selector Board	808C, 808C-11, 808C-12
D03429800	A2 Schematic Diagram Microprocessor	808C, 808C-11, 808C-12
D03434300	A3 Schematic Diagram Signal Board	808C
D03434400	A3 Schematic Diagram Signal Board	808C-11, 808C-12

4.02 The parts lists for each circuit are printed on the back of the schematic diagram. Recommended spare parts, based on factory records, are shown on page 34.

THIS DRAWING AND SPECIFICATIONS SHOWN SHALL NOT BE COPIED OR USED WITHOUT WRITTEN CONSENT OF LEAR SIEGLER, INC., SIERRA ELECTRONIC DIVISION.

A1
DISPLAY/SELECTOR
BOARD
SCHEM D03430800

J1
1
2
3
4
5
6
7
8
9
10
11

BAT {+
-}

J4
1
2

CHG {+
-}

J6
T
S

J2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

W1 (CABLE)

A2
MICROPROCESSOR
SCHEM D03429800

J2

1 SINE
2 ANALOG COMMON
3 D0
4 D1
5 D2
6 D3
7 D4
8 D5
9 D6
10 D7
11 AUDIO
12 IN1
13 IN2
14 DSTB
15 BL
16 DEC
17 QSS
18 32KHZ
19 CLEAR
20 HOLD
21 +10V
22 +5V
23 DIGITAL COMMON
24 -5V
25 DS4

J1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

W2 (CABLE)

A3
SIGNAL BOARD
SCHEM D03454400
D03454400

J2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

J1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

TEST CORD
SLV
RING
TIP

QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES. EXTERNAL THREADS TO BE CLASS 2A; INTERNAL THREADS TO BE CLASS 2B, AFTER PLATING, UNLESS OTHERWISE SPECIFIED.				✓ FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DWG. DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED.	Sierra LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION MENLO PARK, CALIFORNIA 94025	
				TOLERANCE UNLESS SPECIFIED		INTERCONNECT DIAGRAM		
				BASIC		TWO PLACE		
				UP TO 6		± .02 ±		
				6 TO 24		± .03 ±		
				ABOVE 24		± .06 ±		
				ANGULAR DIMENSION		±		
				FINISH:				
REF	QTY.	NEXT ASSY.	MODEL NO.	DATE 3/9/78				
REF	QTY.	NEXT ASSY.	MODEL NO.	BY [Signature]				
REF	QTY.	NEXT ASSY.	MODEL NO.	CHECKED [Signature]				
ASSY. OR ITEM	QTY.	NEXT ASSY.	MODEL NO.	APPROVED [Signature]				
APPLICATION				SCALE		STOCK AS		SHEET 1 OF 1
				D		D03484600		REV. C1

NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, ±1%.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL INDUCTANCE VALUES ARE IN MICROHENRYS.

DATE	APPROVED
11/19/81	W. J.
12/2/81	W. J.
12/18/81	W. J.

NOTES CONTINUED:

808C		808C-11 & C-12	
REF	QTY	REF	QTY
U1	1	U16	1
U2	1	U17	1
U3	1	U18	1
U4	1	U19	1
U5	1	U20	1
U6	1	U21	1
U7	1	U22	1
U8	1	U23	1
U9	1	U24	1
U10	1	U25	1
U11	1	U26	1
U12	1	U27	1
U13	1	U28	1
U14	1	U29	1
U15	1	U30	1

6. SWITCH POSITION FOR S2:

7. SWITCH POSITION FOR S2:

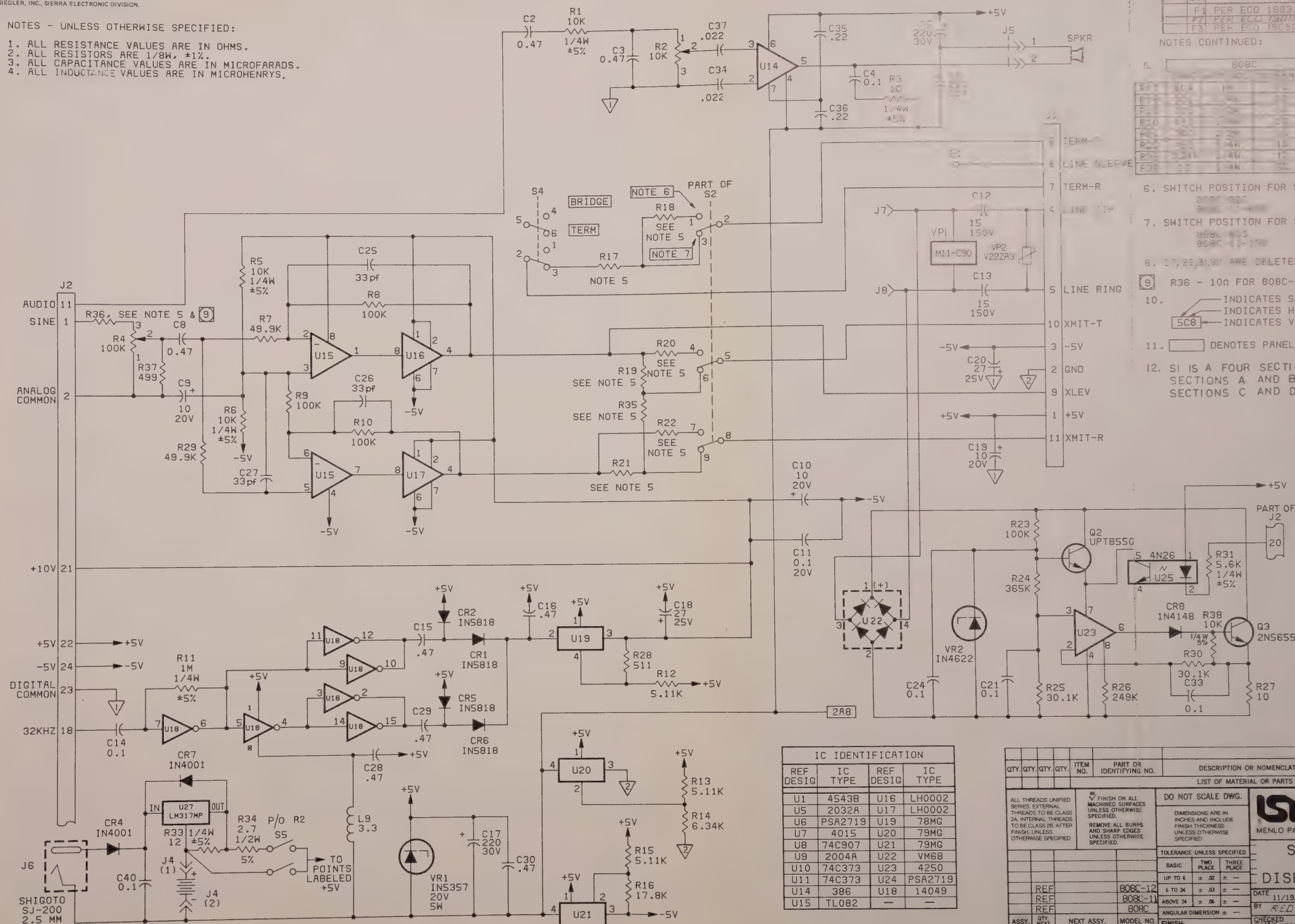
8. C7, C22, C31, C32 ARE DELETED.

9. R36 - 10n FOR 808C-11

10. INDICATES SHEET NUMBER
INDICATES HORIZONTAL ZONE
INDICATES VERTICAL ZONE

11. DENOTES PANEL MARKING.

12. S1 IS A FOUR SECTION SWITCH.
SECTIONS A AND B ARE ON A1 BOARD.
SECTIONS C AND D ARE ON A3 BOARD.



IC IDENTIFICATION			
REF DESIG	IC TYPE	REF DESIG	IC TYPE
U1	4543B	U16	LH0002
U5	2032A	U17	LH0002
U6	PSA2719	U19	78MG
U7	4015	U20	79MG
U8	74C907	U21	79MG
U9	2004A	U22	VM68
U10	74C373	U23	4250
U11	74C373	U24	PSA2719
U14	386	U18	14049
U15	TL082		

QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
DO NOT SCALE DWG.								
DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.								
TOLERANCE UNLESS SPECIFIED								
BASIC TWO PLACE THREE PLACE								
UP TO 6 ± .02 ± .01 ± .005								
6 TO 24 ± .03 ± .02 ± .01								
ABOVE 24 ± .06 ± .04 ± .02								
ANGULAR DIMENSION ±								
FINISH:								
ALL THREADS UNFINISHED SERIES EXTERNAL THREADS TO BE CLASS 2A. INTERNAL THREADS TO BE CLASS 2B. AFTER FINISH, UNLESS OTHERWISE SPECIFIED.								
FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.								
Sierra CODE IDENT. NO. 54778								
SCHEMATIC DIAGRAM A1 DISPLAY/SELECTOR BOARD								
DATE 11/19/81 BY RED D03430800 F3								
CHECKED 12/18/81 APPR SCALE NONE STOCK AS SHEET 1 OF 2								

D03430800

A

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Display/Selector Board for 808C	A03430901
A 1	Display/Selector Board for 808C-11	A03430903
A 1	Display/Selector Board for 808C-12	A03430902
C 01	Capacitor 220 uF 20% 30V tantalum	902710227
C 02	Capacitor .47 uF 20% 100V ceramic	901320474
C 03	Capacitor .47 uF 20% 100V ceramic	901320474
C 04	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 05	Capacitor 220 uF 20% 30V tantalum	902710227
C 06	Capacitor 220 uF 20% 30V tantalum	902710227
C 08	Capacitor .47 uF 20% 100V ceramic	901320474
C 09	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 10	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 11	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 12	Capacitor 15 uF -10% +50% 150V electrolytic	903300156
C 13	Capacitor 15 uF -10% +50% 150V electrolytic	903300156
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor .47 uF 20% 100V ceramic	901320474
C 16	Capacitor .47 uF 20% 100V ceramic	901320474
C 17	Capacitor 220 uF 20% 30V tantalum	902710227
C 18	Capacitor 27 uF 10% 25V solid tantalum	902700276
C 19	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 20	Capacitor 27 uF 10% 25V solid tantalum	902700276
C 21	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 23	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 24	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 25	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 26	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 27	Capacitor 33 pF 2% 100V N2200 ceramic	901430330
C 28	Capacitor .47 uF 20% 100V ceramic	901320474
C 29	Capacitor .47 uF 20% 100V ceramic	901320474
C 30	Capacitor .47 uF 20% 100V ceramic	901320474
C 33	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 34	Capacitor .022 uF 20% 100V ceramic	901310223
C 35	Capacitor .22 uF 10% 50V CK06 ceramic	901330224
C 36	Capacitor .22 uF 10% 50V CK06 ceramic	901330224
C 37	Capacitor .022 uF 20% 100V Z5U ceramic	901310223
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 10% 100V CK06 ceramic	901330104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
CR 01	Rectifier 1N5818 Schottky	910805818
CR 02	Rectifier 1N5818 Schottky	910805818
CR 03	Diode 1N4148 silicon	910504148
CR 04	Diode 1N4001 50V 1A silicon	910504001
CR 05	Rectifier 1N5818 Schottky	910805818
CR 06	Rectifier 1N5818 Schottky	910805818
CR 07	Diode 1N4001 50V 1A silicon	910504001
CR 08	Diode 1N4148 75V silicon	910504148
DS 01	LED display HP 5082-7656 red ±1	910507656
DS 02	LED display HP 5082-7653 red seven segment	910507653
DS 03	LED display HP 5082-7653 red seven segment	910507653
DS 04	LED display HP 5082-7653 red seven segment	910507653
DS 05	LED display HP 5082-7653 red seven segment	910507653
DS 06	Light emitting diode - red	910504684
DS 07	Light emitting diode - red	910504684
J 01	11-conductor ribbon cable w/plug (W3 on intercon diag)	916400082
J 02	25-pin strip socket	914200089
J 04	3-circuit connector MOLEX 22-03-2031	914800289
J 05	3-circuit connector 90° MOLEX 22-05-2031	914800273
J 06	DC power jack SJ-200	914400053
J 07	Cuff link connector	C03328800
J 08	Cuff link connector	C03328800
L 01	Inductor 220 uH 10% RF shielded	909000193
L 02	Inductor 220 uH 10% RF shielded	909000193
L 03	Inductor 220 uH 10% RF shielded	909000193
L 04	Inductor 220 uH 10% RF shielded	909000193
L 05	Inductor 220 uH 10% RF shielded	909000193
L 06	Inductor 220 uH 10% RF shielded	909000193
L 07	Inductor 220 uH 10% RF shielded	909000193
L 08	Inductor 220 uH 10% RF shielded	909000193
L 09	Inductor 3.3 mH molded	909000184
Q 01	Transistor MPS-D54 PNP silicon	910300540
Q 02	Transistor UPTB 550 NPN power	910307550
Q 03	Transistor 2N5655 silicon NPN power	910305655
R 01	Resistor 10k Ohm 5% 1/4W composition	906900103
R 02	Potentiometer 10k Ohm 20% w/rotary switch (S5)	907920103
R 03	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 04	Potentiometer 100k Ohm 5% 10-turn wire wound	907910104
R 05	Resistor 10k Ohm 5% 1/4W composition	906900103
R 06	Resistor 10k Ohm 5% 1/4W composition	906900103
R 07	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 08	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 09	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 10	Resistor 100k Ohm 1% 1/8W metal film	907301003

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.



QTY. QTY. QTY. QTY.				ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE				MATERIAL				SPEC OR NOTE																									
LIST OF MATERIAL OR PARTS LIST																																							
ALL THREADS UNIFIED SERIES EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER FINISH, UNLESS OTHERWISE SPECIFIED					FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.					DO NOT SCALE DWG.					 CODE IDENT. NO. 54778 A DIVISION OF LEAR SIEGLER, INC. MENLO PARK, CALIFORNIA 94025																								
										DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED																													
REF					808C12 808C11 808C					TOLERANCE UNLESS SPECIFIED					SCHEMATIC DIAGRAM AI DISPLAY/SELECTOR BOARD																								
										BASIC TWO PLACE THREE PLACE																													
ASSY. OR ITEM					QTY. NEXT					NEXT ASSY.					MODEL NO.					DATE 11/19/81					SIZE D					DRAWING NO. D03430800					REV. F3				
																				CHECKED																			
APPLICATION										FINISH:					SCALE					STOCK AS					SHEET 2 OF 2														

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 11	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 13	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 14	Resistor 6.34k Ohm 1% 1/8W metal film	907306341
R 15	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 16	Resistor 17.8k Ohm 1% 1/8W metal film	907301782
R 17	(808C) Resistor 604 Ohm 1% 1W metal film	907606040
R 17	(808C-11 & -12) Resistor 150 Ohm 1% 4W power film	907601500
R 18	(808C) Resistor 301 Ohm 1% 1/4W metal film	908303010
R 18	(808C-11 & -12) Resistor 453 Ohm 1% 1W metal film	907604530
R 19	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 19	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 20	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 20	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 21	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 21	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 22	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 22	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 23	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 24	Resistor 365k Ohm 1% 1/8W metal film	907303653
R 25	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 26	Resistor 249k Ohm 1% 1/8W metal film	907302493
R 27	Resistor 10 Ohm 1% 1/8W metal film	907310100
R 28	Resistor 511 Ohm 1% 1/8W metal film	907305110
R 29	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 30	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 31	Resistor 5.6k Ohm 5% 1/4W composition	906900562
R 32	Resistor 2.2 meg Ohm 5% 1/4W composition	906900225
R 33	Resistor 12 Ohm 5% 1/4W composition	906900120
R 34	Resistor 2.7 Ohm 5% 1/2W composition	905002R70
R 35	(808C) Resistor 3.24k Ohm 1% 1/4W metal film	908303241
R 35	(808C-11 & -12) Resistor 301 Ohm 1% 2W precision film	907803010
R 36	(808C & 808C-11) Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 36	(808C-12) Resistor 1.47k Ohm 1% 1/8W metal film	907301471
R 37	Resistor 499 Ohm 1% 1/8W metal film	907304990
R 38	Resistor 10k Ohm 5% 1/4W composition	906900103
S 01	Switch 12-pos 2-pole rotary (used with S1 on A3 board)	911200289
S 02	Switch 4PDT rocker PC mount	911000095
S 03	Switch 3-pole 2-throw pushbutton	911300072
S 04	Switch DPDT 5A rocker	911000096
S 05	Switch (Part of R2)	907920103
SPKR	Speaker assembly with plug	A03246400

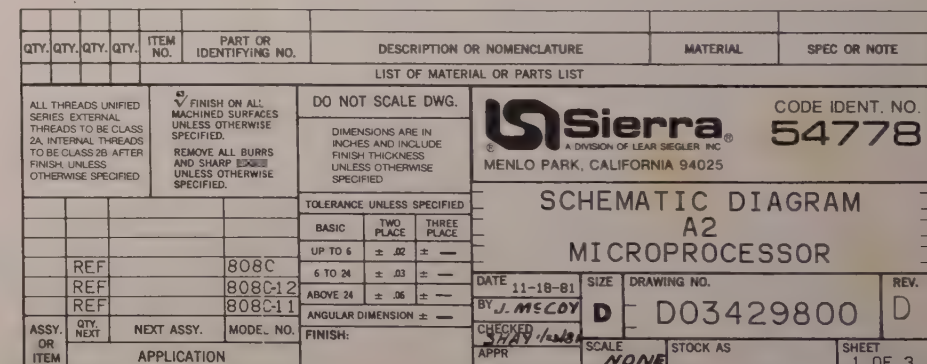
Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
U 01	IC 4543B CMOS	920204543
U 02	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 03	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 04	Common-junction resistor network 2.2k Ohm 2% 0.2W	920610222
U 05	Transistor array Sprague ULN2032A	920302032
U 06	IC Fairchild FSA2719M diode array	920302719
U 07	IC 4015B CMOS	920204015
U 08	IC 74C907 CMOS	920274907
U 09	IC 1416 CMOS	920201416
U 10	IC 74C373 CMOS	920274373
U 11	IC 74C373 CMOS	920274373
U 12	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 13	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 14	IC LM386N CMOS	920300386
U 15	IC TL082 JFET op amp	920210082
U 16	IC LH0002C current amplifier	920310002
U 17	IC LH0002C current amplifier	920310002
U 18	IC 4049B CMOS	920204049
U 19	IC Fairchild UA78MGV1C voltage regulator	920310078
U 20	IC Fairchild UA79MGV1C voltage regulator	920310079
U 21	IC Fairchild UA79MGV1C voltage regulator	920310079
U 22	Bridge Varo VM68 dual in-line	910800068
U 23	IC LM4250CN programmable operational amplifier	920304250
U 24	IC Fairchild FSA2719M diode array	920302719
U 25	IC 4N26 opto-isolator	920300426
U 26	IC 7555 CMOS timer	920207555
U 27	IC LM 317M voltage regulator	920330317
VP 01	Surge voltage protector Siemens M11-(91)	913100005
VP 02	Metal oxide varistor GE V222A3	913600028
VR 01	Zener diode 1N5357 20V 20% 5W	910505357
VR 02	Zener diode 1N4622 3.9V 5% 250 uA	910634622

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

7. DENOTES GROUND REF.



DWG.	- 003429800	М
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Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 11	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 13	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 14	Resistor 6.34k Ohm 1% 1/8W metal film	907306341
R 15	Resistor 5.11k Ohm 1% 1/8W metal film	907305111
R 16	Resistor 17.8k Ohm 1% 1/8W metal film	907301782
R 17	(808C) Resistor 604 Ohm 1% 1W metal film	907606040
R 17	(808C-11 & -12) Resistor 150 Ohm 1% 4W power film	907601500
R 18	(808C) Resistor 301 Ohm 1% 1/4W metal film	908303010
R 18	(808C-11 & -12) Resistor 453 Ohm 1% 1W metal film	907604530
R 19	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 19	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 20	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 20	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 21	(808C) Resistor 365 Ohm 1% 1/2W metal film	907413650
R 21	(808C-11 & -12) Resistor 150 Ohm 1% 1W metal film	907611500
R 22	(808C) Resistor 453 Ohm 1% 1/4W metal film	908304530
R 22	(808C-11 & -12) Resistor 301 Ohm 1% 1/2W metal film	907403010
R 23	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 24	Resistor 365k Ohm 1% 1/8W metal film	907303653
R 25	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 26	Resistor 249k Ohm 1% 1/8W metal film	907302493
R 27	Resistor 10 Ohm 1% 1/8W metal film	907310100
R 28	Resistor 511 Ohm 1% 1/8W metal film	907305110
R 29	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 30	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 31	Resistor 5.6k Ohm 5% 1/4W composition	906900562
R 32	Resistor 2.2 meg Ohm 5% 1/4W composition	906900225
R 33	Resistor 12 Ohm 5% 1/4W composition	906900120
R 34	Resistor 2.7 Ohm 5% 1/2W composition	905002R70
R 35	(808C) Resistor 3.24k Ohm 1% 1/4W metal film	908303241
R 35	(808C-11 & -12) Resistor 301 Ohm 1% 2W precision film	907803010
R 36	(808C & 808C-11) Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 36	(808C-12) Resistor 1.47k Ohm 1% 1/8W metal film	907301471
R 37	Resistor 499 Ohm 1% 1/8W metal film	907304990
R 38	Resistor 10k Ohm 5% 1/4W composition	906900103
S 01	Switch 12-pos 2-pole rotary (used with S1 on A3 board)	911200289
S 02	Switch 4PDT rocker PC mount	911000095
S 03	Switch 3-pole 2-throw pushbutton	911300072
S 04	Switch DPDT 5A rocker	911000096
S 05	Switch (Part of R2)	907920103
SPKR	Speaker assembly with plug	A03246400

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

Parts List for 808C, -11, -12, A1 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
U 01	IC 40134H CMOS	920204543
U 02	Isolated resistor network 1.7k Ohm 2% 0.1W	920880472
U 03	Isolated resistor network 4.7k Ohm 2% 0.1W	920880472
U 04	Common-junction resistor network 2.2k Ohm 2% 0.2W	920610222
U 05	Transistor array Sprague ULN2003A	920302032
U 06	IC Fairchild FSA2719M diode array	920302719
U 07	IC 4015B CMOS	920204015
U 08	IC 74C907 CMOS	920274907
U 09	IC 1416 CMOS	920201416
U 10	IC 74C373 CMOS	920274373
U 11	IC 74C373 CMOS	920274373
U 12	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 13	Common-junction resistor network 22k Ohm 2% 0.2W	920680223
U 14	IC LM386N CMOS	920300386
U 15	IC TL082 JFET op amp	920210082
U 16	IC LH0002C current amplifier	920310002
U 17	IC LH0002C current amplifier	920310002
U 18	IC 4049B CMOS	920204049
U 19	IC Fairchild UA78MGV1C voltage regulator	920310078
U 20	IC Fairchild UA79MGV1C voltage regulator	920310079
U 21	IC Fairchild UA79MGV1C voltage regulator	920310079
U 22	Bridge Varo VM68 dual in-line	910800068
U 23	IC LM4250CN programmable operational amplifier	920304250
U 24	IC Fairchild FSA2719M diode array	920302719
U 25	IC 4N26 opto-isolator	920300426
U 26	IC 7555 CMOS timer	920207555
U 27	IC LM 317M voltage regulator	920330317
VP 01	Surge voltage protector Siemens M11-(91)	913100005
VP 02	Metal oxide varistor GE V222A3	913600028
VR 01	Zener diode 1N5357 20V 20% 5W	910505357
VR 02	Zener diode 1N4622 3.9V 5% 250 uA	910634622

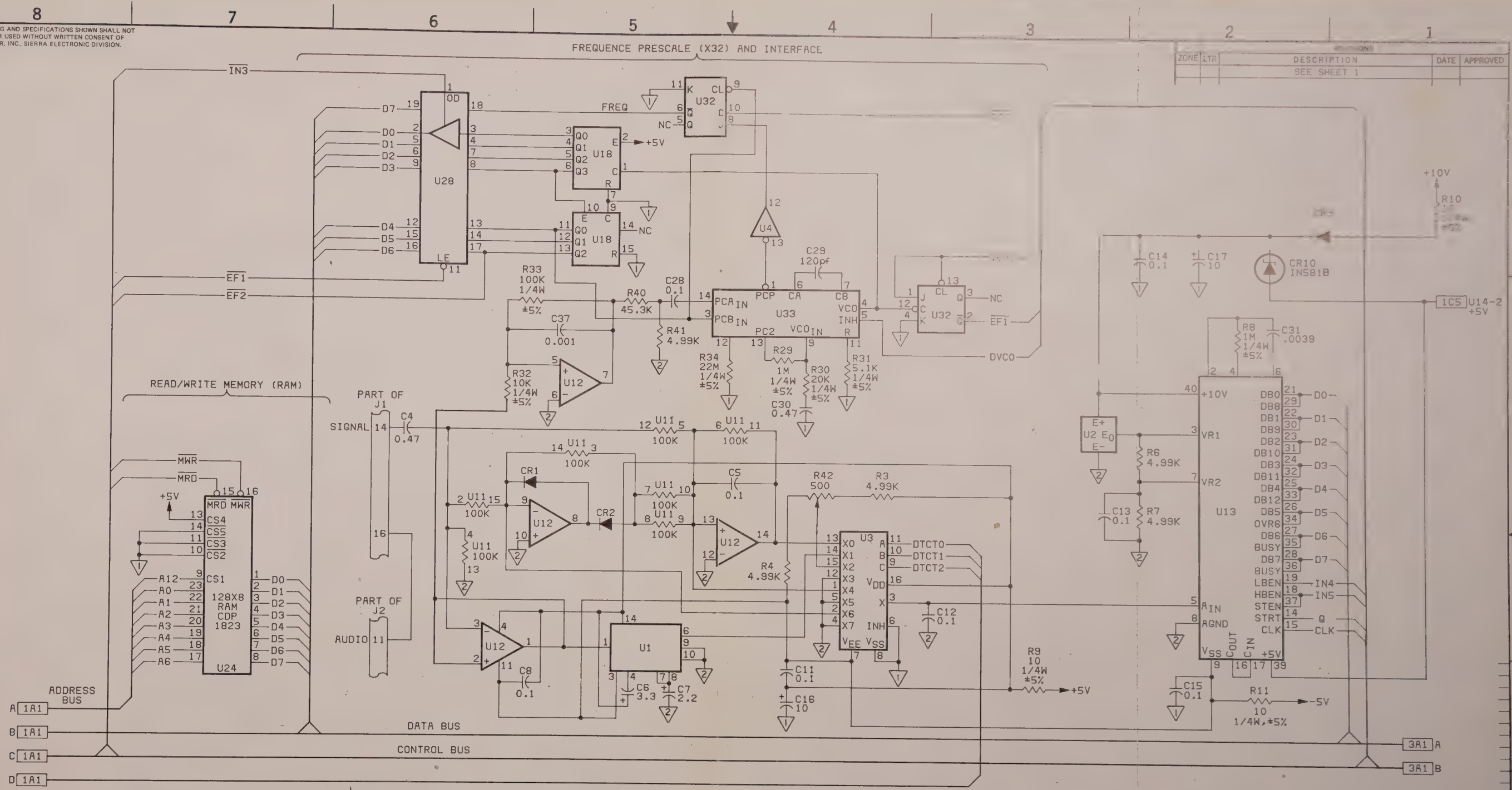
Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

D

C

B

A



ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

ANALOG-DIGITAL CONVERTER & MULTIPLEXER D=(17/20) (4096) AIN

QTY. QTY. QTY. QTY.				ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER FINISH, UNLESS OTHERWISE SPECIFIED.				3. ☒ FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DWG.		
				REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.				
				DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED		 CODE IDENT. NO. 54778 A DIVISION OF LEAR SIEGLER INC. MENLO PARK, CALIFORNIA 94025		
				TOLERANCE UNLESS SPECIFIED				
				BASIC TWO PLACE THREE PLACE		SCHEMATIC DIAGRAM A2 MICROPROCESSOR		
				UP TO 6 ± .02 ±				
				6 TO 24 ± .03 ±				
				ABOVE 24 ± .06 ±				
				ANGULAR DIMENSION ±				
				FINISH:		DATE 11-18-81 SIZE DRAWING NO. REV. BY D D03429800 D		
ASSY. QTY. NEXT ITEM				NEXT ASSY.	MODEL NO.	SCALE STOCK AS SHEET 2 OF 3		
				APPLICATION				

Parts List for 808C, -11, -12, A2 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 2	Microprocessor Board for 808C	A03429901
A 2	Microprocessor Board for 808C-11	A03429902
A 2	Microprocessor Board for 808C-12	A03429903
C 01	Capacitor 10 pF 5% 500V clipped mica	901900100
C 02	Capacitor 39 pF 5% 500V dipped mica	901900390
C 03	Capacitor 82 pF 2% 500V dipped mica	901900820
C 04	Capacitor .47 20% 100V ceramic	901320474
C 05	Capacitor 0.1 uF 5% 50V metalized polycarbonate	903120104
C 06	Capacitor 3.3 uF 20% 25V tantalum	902720335
C 07	Capacitor 2.2 uF 10% 35V tantalum	902720225
C 08	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 11	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 12	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 10 uF 20% 10V tantalum	902760106
C 17	Capacitor 10 uF 20% 10V tantalum	902760106
C 19	Capacitor 120 pF 5% 500V dipped mica	901900121
C 20	Capacitor 120 pF 5% 500V dipped mica	901900121
C 21	Capacitor 2200 pF 1% 100V NPO ceramic	901310222
C 22	Capacitor 2200 pF 1% 100V NPO ceramic	901310222
C 23	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 25	Capacitor 10 uF 20% 10V tantalum	902760106
C 26	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 28	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 29	Capacitor 120 pF 5% 500V dipped mica	901900121
C 30	Capacitor 0.47 uF 10% 50V metalized polycarbonate	903100474
C 31	Capacitor .0039 uF 10% 200V polypropylene	901100392
C 32	Capacitor 10 uF 20% 10V tantalum	902760106
C 33	Capacitor 10 uF 20% 10V tantalum	902760106
C 34	Capacitor 10 uF 20% 10V tantalum	902760106
C 37	Capacitor 1000 pF 10% 200V ceramic	901320102
C 39	Capacitor .47 20% 100V ceramic	901320474
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 43	Capacitor 10 uF 20% 10V tantalum	902760106
C 44	Capacitor 27000 pF 10% 100V ceramic	901300273
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
CR 03	Diode 1N4148 silicon	910504148
CR 04	Diode 1N4148 silicon	910504148
CR 05	Diode 1N4148 silicon	910504148

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
CR 08	Diode 1N4148 silicon	910504148
CR 09	Diode 1N4148 silicon	910504148
CR 10	Rectifier 1N5818	910805818
J 01	16-conductor ribbon cable w/plug (W2 on intercon diag)	916400160
J 02	(Pin 1-11) 11-cond ribbon cable w/plug (W1 on int diag)	916400150
J 02	(Pin 12-25) 14-cond ribbon cable w/plug (W1 on int diag)	916400126
Q 01	Transistor PN4393 junction FET	910304393
R 01	Resistor 10 meg Ohm 5% 1/4W composition	906900106
R 03	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 04	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 06	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 07	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 08	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 09	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 10	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 11	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 13	Resistor 10k Ohm 5% 1/4W composition	906900103
R 14	Resistor 3.16k Ohm 1% 1/8W metal film	907303161
R 15	Resistor 6.65k Ohm 1% 1/8W metal film	907306651
R 16	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 17	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 18	Resistor 562k Ohm 1% 1/8W metal film	907305623
R 19	Resistor 40.2k Ohm 1% 1/8W metal film	907304022
R 20	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 21	Resistor 20k Ohm 5% 1/4W composition	906900203
R 22	Resistor 20k Ohm 5% 1/4W composition	906900203
R 23	Resistor 4.3k Ohm 5% 1/4W composition	906900432
R 24	Resistor 47 Ohm 5% 1/4W composition	906900470
R 25	Resistor 40.2k Ohm 1% 1/8W metal film	907304022
R 26	Resistor 17.4k Ohm 1% 1/8W metal film	907301742
R 27	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 28	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 29	Resistor 1 meg Ohm 5% 1/2W composition	906900105
R 30	Resistor 20k Ohm 5% 1/4W composition	906900203
R 31	Resistor 5.1k Ohm 5% 1/4W composition	906900512
R 32	Resistor 10k Ohm 5% 1/4W composition	906900103
R 33	Resistor 100k Ohm 5% 1/4W composition	906900104
R 34	Resistor 22 meg Ohm 5% 1/4W composition	906900226
R 37	Resistor 17.4k Ohm 1% 1.8W metal film	907301742
R 38	Resistor 499k Ohm 1% 1/8W metal film	907304993
R 39	Resistor 10k Ohm 5% 1/4W composition	906900103
R 40	Resistor 45.3k Ohm 1% 1/8W metal film	907304532
R 41	Resistor 4.99 k Ohm 1% 1/8W metal film	907304991
R 42	Potentiometer 500 Ohm cermet Beckman 68PR500	907930501

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

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DATE APPROVED

D

C

B

A

C

B

A

DISPLAY TIMER / LATCH / GATING

OSCILLATOR INTERFACE

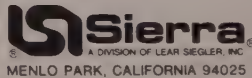
ANALOG CONTROL

TIME BASE

DATA BUS

CONTROL BUS

QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNFINISHED. EXTERNAL THREADS TO BE CLASS 2A. INTERNAL THREADS TO BE CLASS 2B AFTER FINISH. UNLESS OTHERWISE SPECIFIED.						DO NOT SCALE DWG.		
FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.						DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.		
TOLERANCE UNLESS SPECIFIED						BASIC TWO THREE PLACE		
UP TO 6						6 TO 24		
ABOVE 24						ANGULAR DIMENSION		
FINISH:						DATE 11-18-81		
BY						SIZE		
CHECKED						DRAWING NO.		
APPR						D D03429800		
SCALE						STOCK AS		
APPLICATION						SHEET 3 OF 3		



CODE IDENT. NO. 54778

SCHEMATIC DIAGRAM A2 MICROPROCESSOR

D03429800

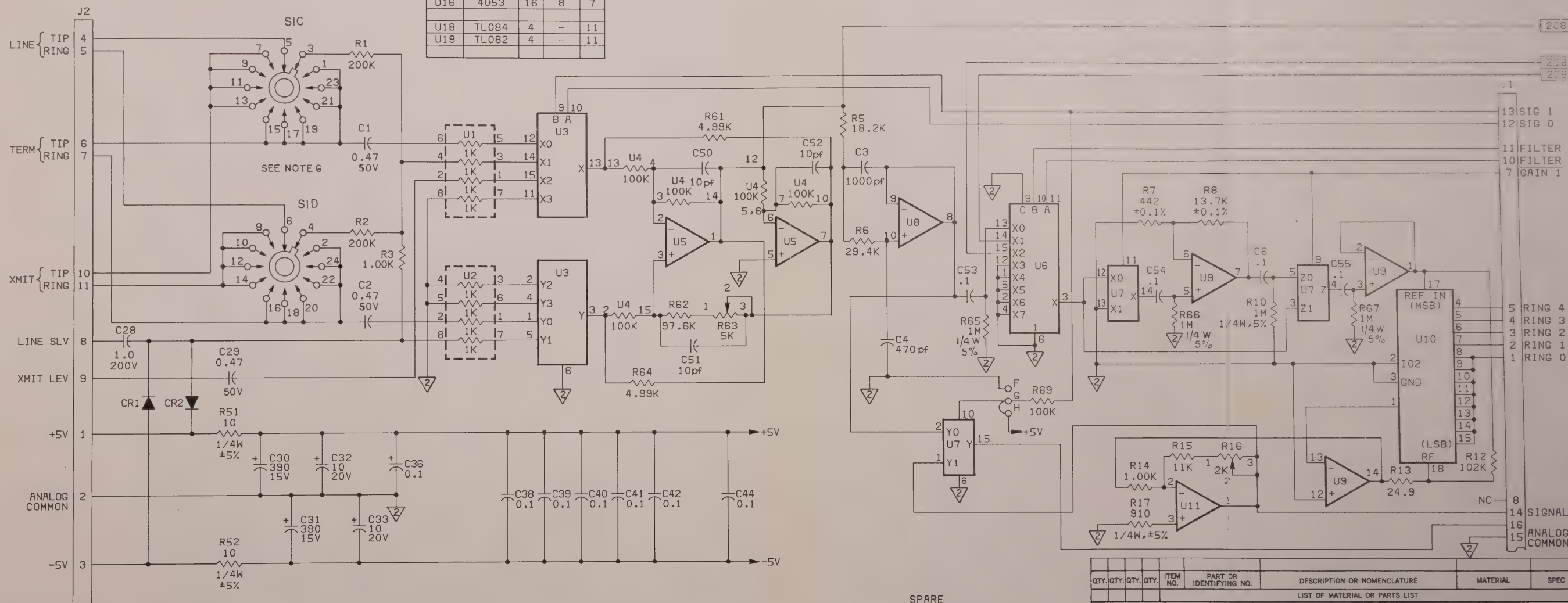
DWG. NO.

BYTCHS L30004 R04 1900183

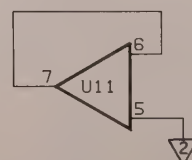
NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, $\pm 1\%$.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE 1N 4148
5.
 INDICATES SHEET NUMBER
 INDICATES HORIZONTAL ZONE
 INDICATES VERTICAL ZONE
6. SI IS A FOUR SECTION SWITCH.
 SECTIONS A AND B ARE ON A1 BOARD.
 SECTIONS C AND D ARE ON A3 BOARD.

IC POWER PIN-OUT				
REF DESIG	IC TYPE	+5V	GND	-5V
U1	RES SIP	-	NONE	-
U2	RES SIP	-	NONE	-
U3	4052	16	8	7
U4	RES PACK	-	NONE	-
U5	TL072	8	-	4
U6	4051	16	8	7
U7	4053	16	8	7
U8	TL084	4	-	11
U9	TL084	4	-	11
U10	7531	16	-	-
U11	TL082	8	NONE	4
U12	RES SIP	-	NONE	-
U13	TL084	4	-	11
U14	RES SIP	-	NONE	-
U15	TL084	4	-	11
U16	4053	16	8	7
U18	TL084	4	-	11
U19	TL082	4	-	11



SPARE



QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES. EXTERNAL THREADS TO BE CLASS 2A. INTERNAL THREADS TO BE CLASS 2B. AFTER FINISH, UNLESS OTHERWISE SPECIFIED.				FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DWG. DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.		
TOLERANCE UNLESS SPECIFIED				BASIC		TWO PLACE	THREE PLACE	
				UP TO 6		$\pm .02$	$\pm .01$	
				6 TO 24		$\pm .03$	$\pm .02$	
				ABOVE 24		$\pm .06$	$\pm .04$	
				ANGULAR DIMENSION		$\pm .01$		
FINISH:								
REF	QTY	QTY	QTY	808C	808C	DATE 12/3/81	SIZE	DRAWING NO.
ASSY. OR ITEM	QTY	QTY	QTY	808C	808C	BY RED	D	D03434300
APPLICATION				CHECKED PAULETTE 010120		SCALE NONE	STOCK AS	SHEET 1 OF 2
				APPR				

CODE IDENT. NO. 54778

Sierra
A DIVISION OF LEAR SIEGLER, INC.
MENLO PARK, CALIFORNIA 94025

SCHEMATIC DIAGRAM
A3
SIGNAL BOARD

DATE 12/3/81
BY RED
CHECKED PAULETTE 010120
APPR

SCALE NONE
STOCK AS
SHEET 1 OF 2

Parts List for 808C, A3 Board

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Signal Board for 808C	A03434602
C 01	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 02	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 03	Capacitor 1000 pF 2% 100V dipped mica	901930102
C 04	Capacitor 470 pF 2% 500V dipped mica	901920471
C 06	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 07	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 08	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 09	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 10	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 11	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 12	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 17	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 18	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 19	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 20	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 21	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 22	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 23	Capacitor 330 pF 1% 50V NPO ceramic	901330331
C 24	Capacitor .01 uF 5% 100V NPO ceramic	901411103
C 25	Capacitor 820 pF 1% 50V NPO ceramic	901330821
C 26	Capacitor 1000 pF 2% 100V dipped mica	901930102
C 27	Capacitor 470 pF 2% 500V dipped mica	901920471
C 28	Capacitor 1.0 uF 5% 200V metallized polycarbonate	903120105
C 29	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 30	Capacitor 390 uF 20% 15V tantalum	902700397
C 31	Capacitor 390 uF 20% 15V tantalum	902700397
C 32	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 33	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 36	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 44	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 45	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 50	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 51	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 52	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100

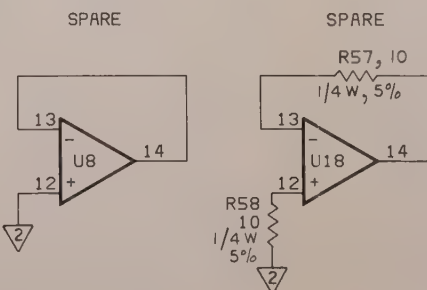
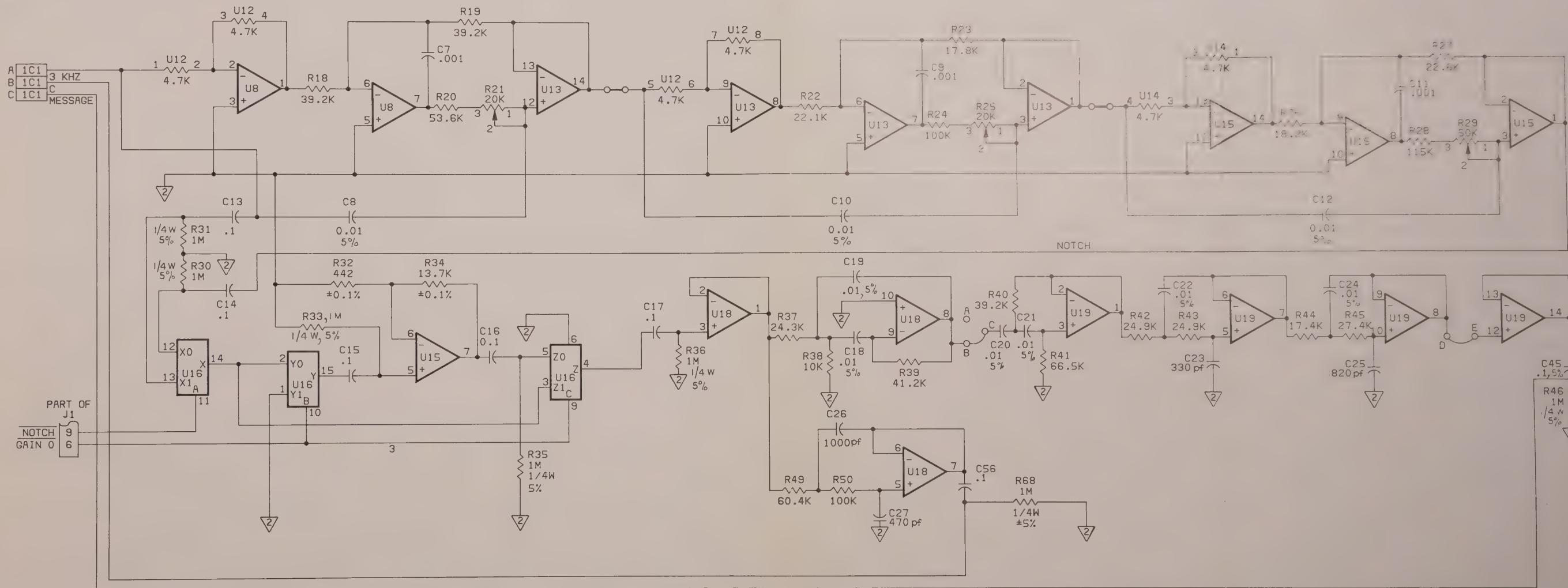
Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
C 53	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 54	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 55	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 56	Capacitor 0.1 uF 20% 50V ceramic	901300104
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
J 01	16-pin strip socket	914200108
J 02	11-pin strip socket	914200007
R 01	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 02	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 03	Resistor 1.0k Ohm 1% 1/8W metal film	907301001
R 05	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 06	Resistor 29.4k Ohm 1% 1/8W metal film	907302942
R 07	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 08	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 10	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 102k Ohm 1% 1/8W metal film	907301023
R 13	Resistor 24.9 Ohm 1% 1/8W metal film	907324R90
R 14	Resistor 1.0k Ohm 1% 1/8W metal film	907301001
R 15	Resistor 11.0k Ohm 1% 1/8W metal film	907301102
R 16	Potentiometer 2k Ohm cermet Spectrol 64x202	907920202
R 17	Resistor 910 Ohm 5% 1/W composition	906900911
R 18	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 19	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 20	Resistor 53.6k Ohm 1% 1/8W metal film	907305362
R 21	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 22	Resistor 22.1k Ohm 1% 1/8W metal film	907302212
R 23	Resistor 17.8k Ohm 1% 1/8W metal film	907301782
R 24	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 25	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 26	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 27	Resistor 22.6k Ohm 1% 1/8W metal film	907302262
R 28	Resistor 115k Ohm 1% 1/8W metal film	907301153
R 29	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 30	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 31	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 32	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 33	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 34	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 35	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 36	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 37	Resistor 24.3k Ohm 1% 1/8W metal film	907302432
R 38	Resistor 10k Ohm 1% 1/8W metal film	907301002
R 39	Resistor 41.2k Ohm 1% 1/8W metal film	907304122

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

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DATE APPROVED



QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES. EXTERNAL THREADS TO BE CLASS 2A. INTERNAL THREADS TO BE CLASS 2B. AFTER FINISH, UNLESS OTHERWISE SPECIFIED.						DO NOT SCALE DWG.		
FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.						DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.		
TOLERANCE UNLESS SPECIFIED						BASIC		
						UP TO 6		
						6 TO 24		
						ABOVE 24		
						ANGULAR DIMENSION		
FINISH:						TWO PLACE		
						THREE PLACE		
						DATE 12/1/81		
						BY RED		
						CHECKED		
						SCALE		
						STOCK AS		
						SHEET 2 OF 2		

Sierra CODE IDENT. NO. 54778
A DIVISION OF LEAR SIEGLER, INC.
MENLO PARK, CALIFORNIA 94025

SCHEMATIC DIAGRAM
A3
SIGNAL BOARD

DATE 12/1/81 SIZE DRAWING NO. REV.
BY RED D D03434300 C3
CHECKED
SCALE STOCK AS SHEET 2 OF 2

DWG. NO. D03434300

DITECTS LS0001 R0W 200CT83

Parts List for 808C, A3 Board

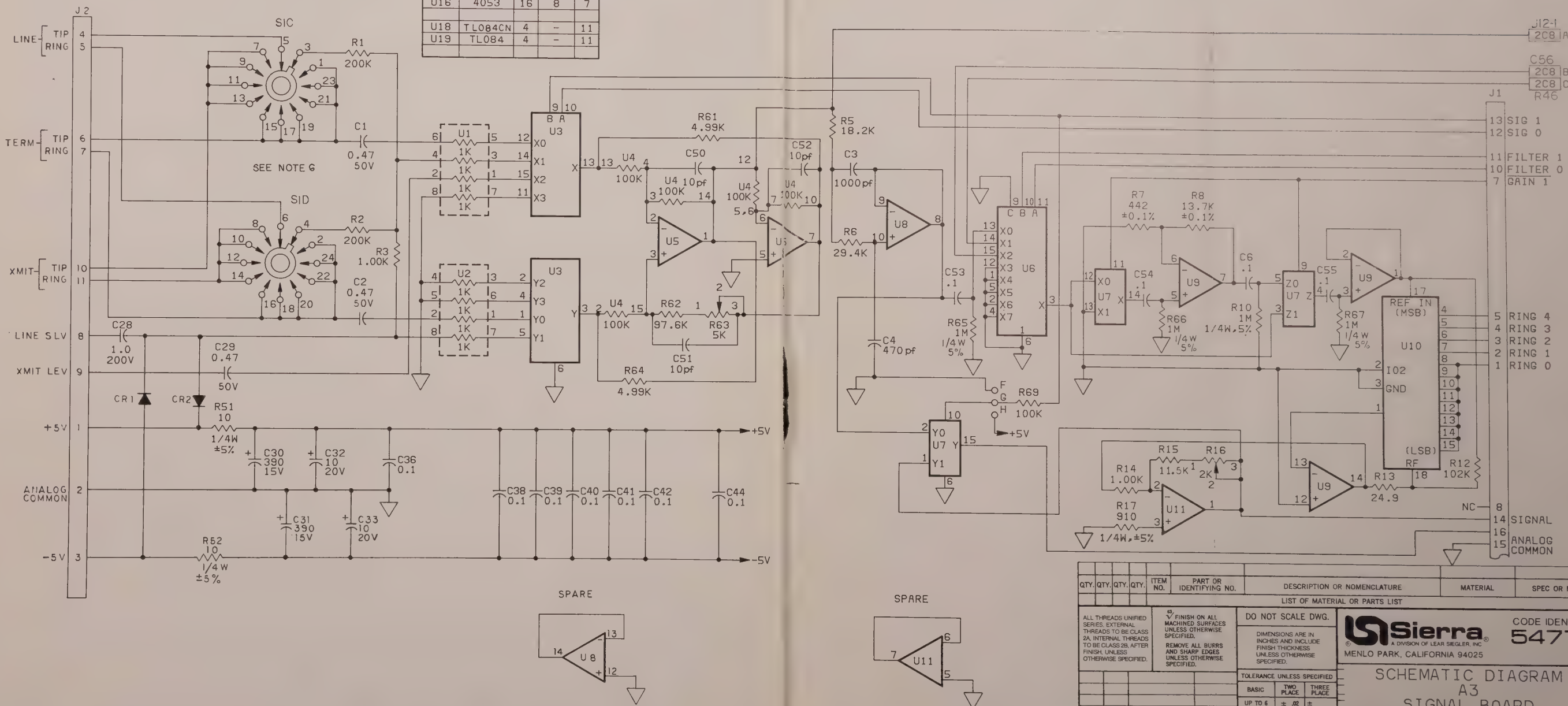
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 40	Resistor 39.2k Ohm 1% 1/8W metal film	907303922
R 41	Resistor 66.5k Ohm 1% 1/8W metal film	907306652
R 42	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 43	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 44	Resistor 17.4k Ohm 1% 1/8W metal film	907301742
R 45	Resistor 27.4k Ohm 1% 1/8W metal film	907302742
R 46	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 49	Resistor 60.4k Ohm 1% 1/8W metal film	907306042
R 50	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 51	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 52	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 57	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 58	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 61	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 62	Resistor 97.6k Ohm 1% 1/8W metal film	907309762
R 63	Potentiometer 5k Ohm cermet Beckman 66XR5K	907930502
R 64	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 65	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 66	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 67	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 68	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 69	Resistor 100k Ohm 1% 1/8W metal film	907301003
S 01	Switch 12-pos 2-pole rotary (used with S1 on A1 board)	911210289
U 01	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 02	Isolated resistor network 1k Ohm 2% 1.8W	920880102
U 03	IC 4052B CMOS	920204052
U 04	Isolated resistor network 100k Ohm 1% 1/8W	920816104
U 05	IC TL072 JFET op amp	920210072
U 06	IC 4051B CMOS	920204051
U 07	IC 4053B CMOS	920204053
U 08	IC TL084 JFET op amp	920210084
U 09	IC TL084A JFET op amp	920220084
U 10	IC 7531K CMOS	920207531
U 11	IC TL082A JFET op amp	920220082
U 12	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 13	IC TL084 JFET op amp	920210084
U 14	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 15	IC TL084A JFET op amp	920220084
U 16	IC 4053B CMOS	920204053
U 18	IC TL084 JFET op amp	920210084
U 19	IC TL084 JFET op amp	920210084

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS.
2. ALL RESISTORS ARE 1/8W, $\pm 1\%$.
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE 1N 4148
5. INDICATES SHEET NUMBER
INDICATES HORIZONTAL ZONE
INDICATES VERTICAL ZONE
6. S1 IS A FOUR SECTION SWITCH.
SECTIONS A AND B ARE ON A1 BOARD.
SECTIONS C AND D ARE ON A3 BOARD.

IC POWER PIN-OUT				
REF DESIG	IC TYPE	+5V	GND	-5V
U1		-	NONE	-
U2		-	NONE	-
U3	4052	16	8	7
U4		-	NONE	-
U5	TL072	8	-	4
U6	4051	16	8	7
U7	4053	16	8	7
U8	TL084CN	4	-	11
U9	TL084CN	4	-	11
U10	7531	16	-	-
U11	TL082A	8	NONE	4
U12		-	NONE	-
U13	TL084CN	4	-	11
U14		-	NONE	-
U15	TL084ACN	4	-	11
U16	4053	16	8	7
U18	TL084CN	4	-	11
U19	TL084	4	-	11



QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER FINISH UNLESS OTHERWISE SPECIFIED.					DO NOT SCALE DWG.			
FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.					DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.			
TOLERANCE UNLESS SPECIFIED					BASIC TWO PLACE THREE PLACE			
UP TO 6					$\pm .02$			
6 TO 24					$\pm .03$			
ABOVE 24					$\pm .06$			
ANGULAR DIMENSION					$\pm$			
FINISH:								
REF					808C12	DATE 12/3/81	SIZE	DRAWING NO.
REF					808C11	BY RED	D	D03434400
ASSY. OR ITEM	QTY. NEXT	NEXT ASSY.	MODEL NO.	APPLICATION	CHECKED	APPR	SCALE NONE	STOCK AS
							SHEET 1 OF 2	REV. C2

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CODE IDENT. NO.
54778

SCHEMATIC DIAGRAM
A3
SIGNAL BOARD

DWG. NO. D03434400

Parts List for 808C-11,-12, A3 Board

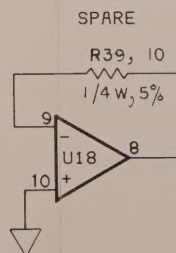
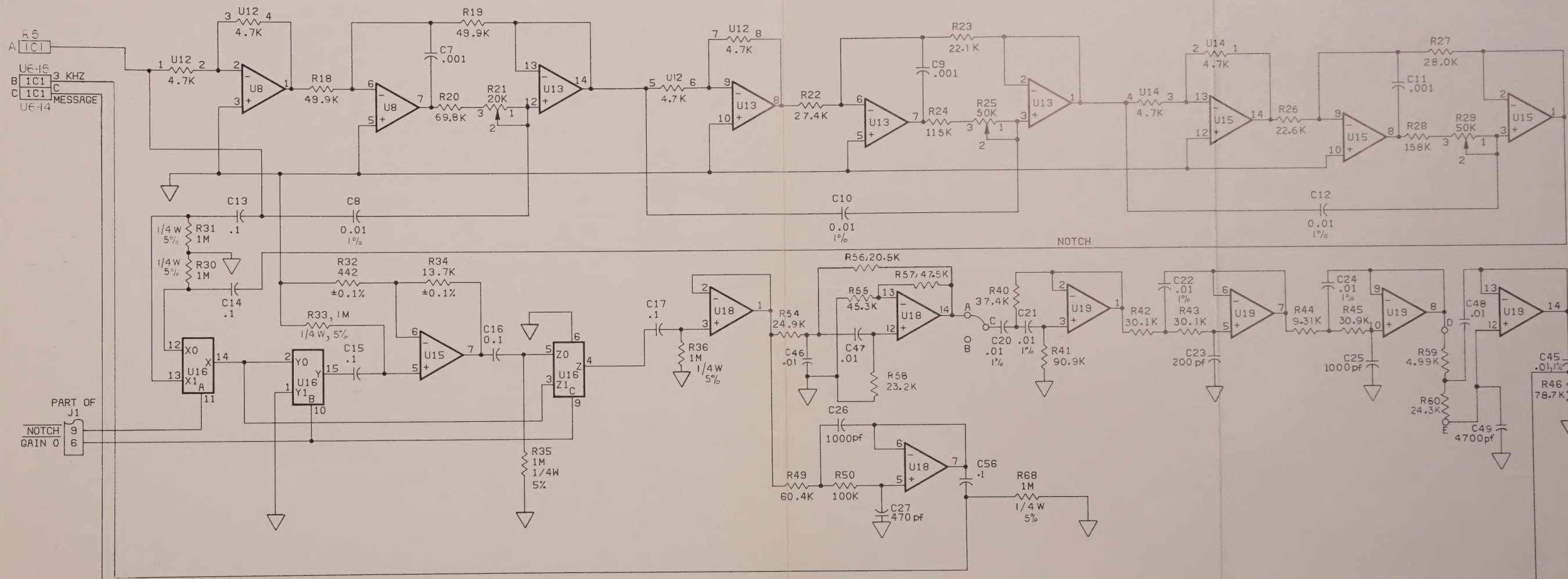
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A 1	Signal Board for 808C-11 & 808C-12	A03434601
C 01	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 02	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 03	Capacitor 100 pF 2% 100V dipped mica	901930102
C 04	Capacitor 470 pF 2% 500V dipped mica	901920471
C 06	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 07	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 08	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 09	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 10	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 11	Capacitor .001 uF 5% 100V NPO ceramic	901440102
C 12	Capacitor 0.01 uF 1% 100V ceramic	901430103
C 13	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 14	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 15	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 16	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 17	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 20	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 21	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 22	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 23	Capacitor 200 pF 2% dipped mica	901910201
C 24	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 25	Capacitor 100 pF 2% 100V dipped mica	901930102
C 26	Capacitor 100 pF 2% 100V dipped mica	901930102
C 27	Capacitor 470 pF 2% 500V dipped mica	901920471
C 28	Capacitor 1.0 uF 5% 200V metalized polycarbonate	903120105
C 29	Capacitor .47 uF 5% 50V X7R ceramic	901340474
C 30	Capacitor 390 uF 20% 15V tantalum	902700397
C 31	Capacitor 390 uF 20% 15V tantalum	902700397
C 32	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 33	Capacitor 10 uF 20% 20V dipped tantalum	902710106
C 36	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 38	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 39	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 40	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 41	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 42	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 44	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 45	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 46	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 47	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 48	Capacitor 0.01 uF 1% 100V NPO ceramic	901430103
C 49	Capacitor .001 uF 5% 100V NPO ceramic	901900472
C 50	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
C 51	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 52	Capacitor 10 pF $\pm$.25 pF 500V N330 ceramic	901430100
C 53	Capacitor 2.2 uF 20% 50V ceramic	901300104
C 54	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 55	Capacitor 0.1 uF 20% 50V ceramic	901300104
C 56	Capacitor 0.1 uF 20% 50V ceramic	901300104
CR 01	Diode 1N4148 silicon	910504148
CR 02	Diode 1N4148 silicon	910504148
J 01	16-pin strip socket	914200108
J 02	11-pin strip socket	914200087
R 01	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 02	Resistor 200k Ohm 1% 1/8W metal film	907302003
R 03	Resistor 1k Ohm 1% 1/8W metal film	907301001
R 05	Resistor 18.2k Ohm 1% 1/8W metal film	907301822
R 06	Resistor 29.4k Ohm 1% 1/8W metal film	907302942
R 07	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 08	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 10	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 12	Resistor 102k Ohm 1% 1/8W metal film	907301023
R 13	Resistor 24.9 Ohm 1% 1/8W metal film	907324R90
R 14	Resistor 1k Ohm 1% 1/8W metal film	907301001
R 15	Resistor 11.5k Ohm 1% 1/8W metal film	907301152
R 16	Potentiometer 2k Ohm cermet Spectrol 64x202	907920202
R 17	Resistor 910 Ohm 5% 1/4W composition	906900911
R 18	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 19	Resistor 49.9k Ohm 1% 1/8W metal film	907304992
R 20	Resistor 69.8k Ohm 1% 1/8W metal film	907306982
R 21	Potentiometer 20k Ohm cermet Beckman 68XR20K	907930203
R 22	Resistor 27.4k Ohm 1% 1/8W metal film	907302742
R 23	Resistor 22.1k Ohm 1% 1/8W metal film	907302212
R 24	Resistor 115k Ohm 1% 1/8W metal film	907301153
R 25	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 26	Resistor 22.6k Ohm 1% 1/8W metal film	907302262
R 27	Resistor 28.0k Ohm 1% 1/8W metal film	907302802
R 28	Resistor 158k Ohm 1% 1/8W metal film	907301583
R 29	Potentiometer 50k Ohm cermet Beckman 66XR50K	907930503
R 30	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 31	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 32	Resistor 442 Ohm 0.1% 1/8W metal film	907704420
R 33	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 34	Resistor 13.7k Ohm 0.1% 1/8W metal film	907711372
R 35	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 36	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 39	Resistor 10.0 Ohm 5% 1/4V composition	906900100
R 40	Resistor 37.4k Ohm 1% 1/8W metal film	907303742

Manufacturer's part numbers are given for some items only to aid identification. In some cases equivalent components from other suppliers may also be used.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST								
ALL THREADS UNIFIED SERIES. EXTERNAL THREADS TO BE CLASS 2A. INTERNAL THREADS TO BE CLASS 2B. AFTER FINISH, UNLESS OTHERWISE SPECIFIED.						DO NOT SCALE DWG. DIMENSIONS ARE IN INCHES AND INCLUDE FINISH THICKNESS UNLESS OTHERWISE SPECIFIED.		
FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.						TOLERANCE UNLESS SPECIFIED		
						BASIC TWO PLACE THREE PLACE		
						UP TO 6 ± .02 ±		
						6 TO 24 ± .03 ±		
						ABOVE 24 ± .06 ±		
						ANGULAR DIMENSION ±		
						FINISH: —		
APPLICATION						DATE 12/1/81 SIZE DRAWING NO. REV.		
						BY RED D D03434400 C2		
						CHECKED		
						APPR		
						SCALE NONE STOCK AS SHEET 2 OF 2		

Parts List for 808C-11,-12, A3 Board

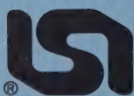
REF DESIG	DESCRIPTION	SIERRA PART NUMBER
R 41	Resistor 90.9k Ohm 1% 1/8W metal film	907309092
R 42	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 43	Resistor 30.1k Ohm 1% 1/8W metal film	907303012
R 44	Resistor 9.31k Ohm 1% 1/8W metal film	907309311
R 45	Resistor 30.9k Ohm 1% 1/8W metal film	907303092
R 46	Resistor 78.7k Ohm 1% 1/8W metal film	907307872
R 49	Resistor 60.4k Ohm 1% 1/8W metal film	907306042
R 50	Resistor 100k Ohm 1% 1/8W metal film	907301003
R 51	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 52	Resistor 10.0 Ohm 5% 1/4W composition	906900100
R 54	Resistor 24.9k Ohm 1% 1/8W metal film	907302492
R 55	Resistor 45.3k Ohm 1% 1/8W metal film	907304532
R 56	Resistor 20.5 Ohm 1% 1/8W metal film	907302052
R 57	Resistor 47.5k Ohm 1% 1/8W metal film	907304752
R 58	Resistor 23.2k Ohm 1% 1/8W metal film	907302322
R 59	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 60	Resistor 24.3k Ohm 1% 1/8W metal film	907302432
R 61	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 62	Resistor 97.6k Ohm 1% 1/8W metal film	907309762
R 63	Potentiometer 5k Ohm cermet Beckman 66XR5K	907930502
R 64	Resistor 4.99k Ohm 1% 1/8W metal film	907304991
R 65	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 66	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 67	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 68	Resistor 1 meg Ohm 5% 1/4W composition	906900105
R 69	Resistor 100k Ohm 1% 1/8W metal film	907301003
S 01	Switch 12-pos 2-pole rotary (used with S1 on A1 board)	911210289
U 01	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 02	Isolated resistor network 1k Ohm 2% 1/8W	920880102
U 03	IC 4052B CMOS	920204052
U 04	Isolated resistor network 100k Ohm 1% 1/8W	920816104
U 05	IC TL072 JFET op amp	920210072
U 06	IC 4051B CMOS	920204051
U 07	IC 4053B CMOS	920204053
U 08	IC TL084 JFET op amp	920210084
U 09	IC TL084A JFET op amp	920220084
U 10	IC 7531K CMOS	920207531
U 11	IC TL082A JFET op amp	920220082
U 12	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 13	IC TL084 JFET op amp	920210084
U 14	Isolated resistor network 4.7k Ohm 2% 0.2W	920880472
U 15	IC TL084A JFET op amp	920220084
U 16	IC 4053B CMOS	920204053
U 18	IC TL084 JFET op amp	920210084
U 19	IC TL084 JFET op amp	920210084

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